

# MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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## INTRODUCTION.

The MONTHLY WEATHER REVIEW for November, 1899, is based on reports from about 3,024 stations furnished by paid and voluntary observers, classified as follows: regular stations of the Weather Bureau, 158; West Indian service stations, 12; special river stations, 132; special rainfall stations, 48; voluntary observers of the Weather Bureau, 2,498; Army post hospital reports, 27; United States Life-Saving Service, 14; Southern Pacific Railway Company, 96; Canadian Meteorological Service, 32; Mexican Telegraphic Service, 20; Mexican voluntary stations, 7. International simultaneous observations are received from a few stations and used, together with trustworthy newspaper extracts and special reports.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Meteorologist to the Hawaiian Government Survey, Honolulu; Senor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Señor A. M. Chaves, Director-General of Mexican Telegraphs; Mr. Maxwell Hall,

Government Meteorologist, Kingston, Jamaica; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; and Capt. J. E. Craig, Hydrographer, United States Navy.

The REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local meridian is mentioned.

## FORECASTS AND WARNINGS.

By Prof. E. B. GANNETT, in charge of Forecast Division.

The month of November, 1899, was characterized by a rapid succession of areas of low barometer which advanced from the Pacific Ocean over or north of the State of Washington and thence, with diminishing strength, over the British Northwest Territory, causing persistent low barometric pressure over the northern districts and comparatively high barometric pressure over the southern districts of the United States. This distribution of pressure resulted in an undue prevalence of southerly to southwesterly winds and moderate and dry weather from the Plateau and Rocky Mountain districts to the Atlantic coast, and almost daily rains and high winds in the middle and northern Pacific coast States.

The settled character of the month's weather over the eastern half of the country was broken by two disturbances of the Gulf, or southwest type, neither of which possessed, in their passage over the Atlantic coast districts, the strength usually shown by these storms. They were, however, attended by copious rains which broke the serious drought that had prevailed in the lower Mississippi Valley and the Southwestern States.

The Lake region was not visited by gales of marked severity, although on the 1st and 2d high northerly winds seriously interfered with navigation over the southern end of Lake Michigan.

The disturbance which advanced from the Caribbean Sea to the middle Atlantic States during the closing days of

October, moved rapidly northeastward to Newfoundland during the day and night of November 1.

The heavy frosts of the opening days of the month in the Gulf and South Atlantic States were accurately forecast, and wide and timely notice of their coming was distributed throughout the sections visited.

A severe storm visited the Island of Jamaica, W. I., on the 8th and 9th, causing considerable damage to property and crops from the east end of the island to Morant Bay on the south and Lucea on the north coast.

A report from Denison, Tex., dated the 22d, stated that thousands of acres of farming land in that section were under water.

## CHICAGO FORECAST DISTRICT.

The month was marked by much milder temperature than usual, and infrequent storms in the Chicago forecast district. No special warnings were issued except to vessel interests on the upper lakes.

The forecasts of October 31 and November 1, were for high northerly, and probably dangerous winds on Lakes Michigan, Huron, and eastern Superior. During the 1st and 2d high wind seriously interfered with shipping, and almost prohibited navigation over the southern end of Lake Michigan. The storms which visited the upper lakes on the 16-17th, 29th-30th were not attended by dangerously high winds.—  
*H. J. Cox, Professor.*

## SAN FRANCISCO FORECAST DISTRICT.

The month was marked by heavy storms along the Pacific coast north of San Francisco; south of San Francisco there were several dates of comparatively heavy rainfall and moderate winds.

Warnings of rain were furnished to the raisin growers of the San Joaquin Valley, but owing to the low temperature and frequent showers much of the last crop was sent to the wineries. The service of the Bureau was satisfactory and many compliments were received from growers and others.

The month was especially trying on the commerce of the coast. At the beginning of the month conditions were favorable for fog, and inbound vessels were delayed. From the 5th on, the winds were generally from southeast, and a large number of vessels were known to be off shore but were unable to make their desired harbor. Nearly all of these vessels came into port after long and trying voyages.

About the middle of the month a succession of low areas began impinging the coast between the parallels of 40° and 45°. These were generally accompanied by rain over northern California and high southeasterly winds from Cape Mendocino northward. Storm and information signals were displayed in connection with these low areas. Light frosts were forecast successfully on the 23d and 24th.—A. G. McAdie, *Forecast Official*.

## PORTLAND, OREG., FORECAST DISTRICT.

The gales along the coast were almost continuous from the 18th to the close of the month. The gales were anticipated by displays of the storm signals, and the signals ordered were in every instance verified.

River forecasts for the Willamette were issued from the 27th to the 30th, and were of great value to merchants and others in Portland.—B. S. Pague, *Forecast Official*.

On the 2d and 3d warnings of heavy frost for Texas were supplemented by I. M. Cline, Section Director, Galveston, Tex., with frost warning for the sugar and trucking regions of Texas. As a result of these warnings the saving of seed cane was rushed to completion, truck gardens were protected as far as practicable, and many of the tender crops were saved from injury.

## HAVANA FORECAST DISTRICT.

On the morning of the 9th Cuban stations and Kingston, Jamaica, were notified that a storm was apparently central south of eastern Cuba. In the afternoon the Jamaica cable service was interrupted. At 4:00 p. m. Santiago and Puerto Principe were informed that the storm was moving north-northwest and that rains and high southeasterly winds backing to easterly were indicated for eastern Cuba, and all Cuban stations warned of rains and high winds.

Reports from Kingston dated the 8th, received the afternoon of the 9th, indicated very stormy conditions near that place, and cablegrams to newspapers in the United States confirmed these reports. No authentic reports of reported damage on the Island of Jamaica on the 8th have been received.

High seas were reported outside on the 26th, undoubtedly due to the passage northeastward of a storm which was central near New Orleans, La., on the morning of the 25th.—W. B. Stockman, *Forecast Official*.

## AREAS OF HIGH AND LOW PRESSURE.

During the month there were nine highs and ten lows that were sufficiently well defined to be traced on Charts I and II, respectively. The following table gives the principal facts regarding the place of origin and of disappearance, of duration and velocity of these highs and lows, and the following description is added.

**Highs.**—Only three of the highs were first noted near the middle Pacific coast, Nos. III, VIII, and IX. Nos. I, IV, V, and VI began to the north of Montana, or very near there. No. II began in Manitoba, and was like an offshoot from No. I when it reached North Dakota. No. VII began in South Dakota. The general course of these highs was eastward. No. III was last noted in Wyoming where it remained stationary for several days before losing its entity. Nos. VIII and IX disappeared in Ontario. No. V, in Tennessee, and Nos. I and VII off the south Atlantic coast, and Nos. II, IV, and VI were last seen off Nova Scotia or the north Atlantic coast.

**Lows.**—Four of the lows were first noted on the Pacific coast. No. VII in southern California, and Nos. V, VI, and IX on the north Pacific coast. No. II was first seen to the north of Montana, Nos. IV, and X, in Wyoming, and No. III in Iowa. No. VIII began on the west Gulf coast, and No. I in Alabama. The general path of these lows was east or northeast. No. IX was last noted over Lake Superior. No. IV in Ohio, Nos. VII and VIII off the south Atlantic coast, and the remaining six in the Gulf of St. Lawrence. Very few high winds were reported in connection with these lows. On 8 p. m. of 3d, as low No. I approached the middle Atlantic coast, Sandy Hook reported an east wind of 60 miles an hour. The next morning Block Island experienced an east wind of 48 miles. On a. m. of 12th, as low No. III moved up the middle Atlantic coast, Sandy Hook reported northwest wind of 48 miles, and that evening New York, N. Y., and Woods Hole reported northwest winds of 48 miles each.—H. A. Hazen, *Professor*.

## Movements of centers of areas of high and low pressure.

| Number.                | First observed. |         |          | Last observed. |         |          | Path.   |           | Average velocities. |         |
|------------------------|-----------------|---------|----------|----------------|---------|----------|---------|-----------|---------------------|---------|
|                        | Date.           | Lat. N. | Long. W. | Date.          | Lat. N. | Long. W. | Length. | Duration. | Daily.              | Hourly. |
| <b>High areas.</b>     |                 |         |          |                |         |          |         |           |                     |         |
| I.....                 | 30, a. m.       | 52      | 119      | 11, a. m.      | 32      | 80       | 4,680   | 12.0      | 390                 | 16.3    |
| II.....                | 1, p. m.        | 52      | 95       | 4, a. m.       | 45      | 60       | 1,860   | 2.5       | 744                 | 31.0    |
| III.....               | 4, p. m.        | 41      | 136      | 7, a. m.       | 42      | 107      | 960     | 2.5       | 384                 | 16.0    |
| IV.....                | 9, a. m.        | 54      | 111      | 15, p. m.      | 45      | 58       | 3,780   | 6.5       | 582                 | 24.2    |
| V.....                 | 12, a. m.       | 51      | 116      | 18, p. m.      | 36      | 86       | 2,340   | 3.5       | 669                 | 27.9    |
| VI.....                | 15, a. m.       | 49      | 103      | 18, a. m.      | 43      | 70       | 2,400   | 3.0       | 800                 | 33.3    |
| VII.....               | 18, a. m.       | 44      | 100      | 21, p. m.      | 35      | 75       | 1,920   | 3.5       | 549                 | 22.9    |
| VIII.....              | 19, p. m.       | 43      | 125      | 22, p. m.      | 49      | 84       | 2,100   | 3.0       | 700                 | 29.2    |
| IX.....                | 22, a. m.       | 40      | 121      | 25, p. m.      | 48      | 79       | 2,220   | 3.5       | 634                 | 26.4    |
| Total.....             |                 |         |          |                |         |          | 22,260  | 40.0      | 5,432               | 227.2   |
| Mean of 9 paths.....   |                 |         |          |                |         |          | 2,473   |           | 606                 | 25.2    |
| Mean of 40 days.....   |                 |         |          |                |         |          |         |           | 556                 | 23.2    |
| <b>Low areas.</b>      |                 |         |          |                |         |          |         |           |                     |         |
| I.....                 | 1, p. m.        | 32      | 86       | 5, p. m.       | 47      | 56       | 2,310   | 4.0       | 577                 | 24.1    |
| II.....                | 7, p. m.        | 53      | 109      | 10, p. m.      | 47      | 59       | 2,280   | 3.0       | 760                 | 31.7    |
| III.....               | 9, p. m.        | 43      | 97       | 13, a. m.      | 47      | 61       | 2,040   | 3.5       | 583                 | 24.3    |
| IV.....                | 12, p. m.       | 44      | 107      | 14, p. m.      | 40      | 84       | 1,260   | 2.0       | 630                 | 26.2    |
| V.....                 | 12, p. m.       | 45      | 127      | 16, a. m.      | 47      | 64       | 3,120   | 3.5       | 891                 | 37.1    |
| VI.....                | 15, a. m.       | 49      | 134      | 20, p. m.      | 45      | 60       | 3,480   | 5.5       | 633                 | 26.4    |
| VII.....               | 17, p. m.       | 34      | 116      | 23, p. m.      | 35      | 75       | 3,180   | 6.0       | 530                 | 22.1    |
| VIII.....              | 23, a. m.       | 27      | 99       | 26, p. m.      | 28      | 80       | 1,380   | 3.5       | 394                 | 16.4    |
| IX.....                | 27, a. m.       | 49      | 120      | 30, a. m.      | 48      | 87       | 1,740   | 3.0       | 580                 | 24.2    |
| X.....                 | 29, p. m.       | 45      | 105      | †3, a. m.      | 51      | 66       | 2,310   | 3.5       | 660                 | 26.5    |
| Total.....             |                 |         |          |                |         |          | 23,100  | 37.5      | 6,238               | 259.0   |
| Mean of 10 paths.....  |                 |         |          |                |         |          |         |           | 624                 | 25.9    |
| Mean of 37.5 days..... |                 |         |          |                |         |          |         |           | 616                 | 25.7    |

\*October.

†December.



## RIVERS AND FLOODS.

The extreme low water season of the year 1899 has passed, and during the month of November rising rivers were the rule, except in the case of the Missouri. The Mississippi above Cairo averaged about two feet higher than during October. Below Cairo the increase was not marked, and from Vicksburg south the rise was just about to begin at the close of the month.

Changes in the Missouri were slight, the extreme range at any one place having been but one foot.

The Ohio over its middle portion averaged about three feet higher than during October, but in the upper and lower portions the changes were not so decided.

In the Southwest the excessive rainfall from November 17-22, particularly in Oklahoma and the Indian Territory, caused a rapid rise in the rivers in that section, especially in the Red and Washita. All large streams in the southern portion of the Indian Territory were out of their banks. Several thousand acres of valuable farm land were submerged and many families were compelled to flee to higher ground for safety. At Arthur City, Tex., the river reached a stage of 28.6 feet, 1.6 feet above the danger line, and a portion of the river gage was torn from its fastenings on the railroad bridge and carried away.

It is not believed that any lives were lost in this flood.

The rivers of the Pacific coast were also rising quite rapidly at the close of the month, but with no indications of reaching high stages.

The highest and lowest water, mean stage, and monthly range at 123 river stations are given in the accompanying table. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—H. C. Frankenfeld, Forecast Official.

Heights of rivers referred to zeros of gages, November, 1899.

| Stations.                  | Distance to mouth of river. | Danger line on gage. | Highest water. |          | Lowest water. |             | Mean stage.  | Monthly range. |
|----------------------------|-----------------------------|----------------------|----------------|----------|---------------|-------------|--------------|----------------|
|                            |                             |                      | Height.        | Date.    | Height.       | Date.       |              |                |
| <i>Mississippi River.</i>  | <i>Miles.</i>               | <i>Feet.</i>         | <i>Feet.</i>   |          | <i>Feet.</i>  |             | <i>Feet.</i> | <i>Feet.</i>   |
| St. Paul, Minn.....        | 1,954                       | 14                   | 7.2            | 1        | 4.8           | 29,30       | 5.8          | 2.4            |
| Reeds Landing, Minn.....   | 1,884                       | 12                   | 6.1            | 1        | 2.8           | 29,30       | 3.8          | 3.3            |
| La Crosse, Wis.....        | 1,819                       | 12                   | 7.7            | 1        | 4.0           | 30          | 5.4          | 3.7            |
| North McGregor, Iowa.....  | 1,759                       | 18                   | 7.1            | 4-6      | 3.9           | 27-30       | 5.3          | 3.2            |
| Dubuque, Iowa.....         | 1,699                       | 15                   | 6.8            | 6-8      | 3.8           | 28-30       | 5.2          | 3.0            |
| Leclaire, Iowa.....        | 1,609                       | 10                   | 4.3            | 8,9      | 2.2           | 29,30       | 3.2          | 2.1            |
| Havenport, Iowa.....       | 1,593                       | 15                   | 5.3            | 8,10     | 3.2           | 30          | 4.3          | 2.1            |
| Muscatine, Iowa.....       | 1,562                       | 16                   | 6.6            | 9,10     | 4.1           | 30          | 5.4          | 2.5            |
| Keokuk, Iowa.....          | 1,472                       | 8                    | 2.8            | 10-14    | 1.6           | 30          | 2.3          | 1.2            |
| Hannibal, Mo.....          | 1,462                       | 13                   | 4.6            | 12       | 2.4           | 1,28-30     | 3.5          | 2.5            |
| Grafton, Ill.....          | 1,366                       | 23                   | 5.5            | 12,13    | 3.0           | 1           | 4.5          | 2.9            |
| St. Louis, Mo.....         | 1,364                       | 30                   | 6.5            | 16       | 3.6           | 1           | 5.5          | 2.7            |
| Chester, Ill.....          | 1,189                       | 36                   | 4.5            | 25,26    | 2.4           | 8           | 3.8          | 2.1            |
| Memphis, Tenn.....         | 843                         | 33                   | 3.2            | 26       | 0.5           | 1,2         | 1.8          | 3.7            |
| Helena, Ark.....           | 767                         | 42                   | 5.4            | 25,30    | 1.7           | 1-3         | 3.4          | 5.4            |
| Arkansas City, Ark.....    | 635                         | 42                   | 6.4            | 30       | 1.0           | 2-5         | 2.9          | 3.6            |
| Greenville, Miss.....      | 595                         | 42                   | 4.8            | 30       | 1.2           | 2-6         | 2.4          | 3.8            |
| Vicksburg, Miss.....       | 474                         | 45                   | 2.2            | 30       | -1.6          | 5-7         | -0.3         | 1.5            |
| New Orleans, La.....       | 106                         | 16                   | 4.0            | 22,24    | 2.5           | 3,4         | 3.3          |                |
| <i>Missouri River.</i>     |                             |                      |                |          |               |             |              |                |
| Bismarck, N. Dak.....      | 1,309                       | 14                   | 2.2            | 5-12     | 1.9           | 21-25       | 2.1          | 0.3            |
| Pierre, S. Dak.....        | 1,114                       | 14                   | 2.7            | 10-16    | 2.4           | 27-30       | 2.6          | 0.3            |
| Sioux City, Iowa.....      | 784                         | 19                   | 5.7            | 25       | 5.0           | 1,2         | 5.3          | 0.7            |
| Omaha, Nebr.....           | 669                         | 18                   | 6.9            | 22-27    | 6.4           | 4-6         | 6.6          | 0.5            |
| Plattsmouth, Nebr.....     | 641                         | 10                   | 1.7            | 28-30    | 0.8           | 5-13        | 1.1          | 0.9            |
| St. Joseph, Mo.....        | 481                         | 21                   | 6.5            | 23-29    | 5.5           | 13          | 5.9          | 1.0            |
| Kansas City, Mo.....       | 388                         | 20                   | 5.5            | 30       | 4.8           | 13-16       | 5.0          | 0.7            |
| Boonville, Mo.....         | 199                         | 24                   | 5.0            | 21,27-29 | 4.4           | 14-17,19,20 | 4.7          | 0.6            |
| Hermann, Mo.....           | 103                         | 24                   | 5.0            | 21,27-29 | 4.4           | 14-17,19,20 | 4.7          | 0.6            |
| <i>Illinois River.</i>     |                             |                      |                |          |               |             |              |                |
| Peoria, Ill.....           | 135                         | 14                   | 5.1            | 19       | 4.4           | 4           | 4.8          | 0.7            |
| <i>Youghiogheny River.</i> |                             |                      |                |          |               |             |              |                |
| Confluence, Pa.....        | 59                          | 10                   | 3.9            | 24       | 0.8           | 18          | 1.9          | 3.1            |
| West Newton, Pa.....       | 15                          | 23                   | 4.0            | 2        | 0.6           | 11          | 1.4          | 3.4            |

Heights of rivers referred to zeros of gages—Continued.

| Stations.                     | Distance to mouth of river. | Danger line on gage. | Highest water. |        | Lowest water. |                 | Mean stage.  | Monthly range. |
|-------------------------------|-----------------------------|----------------------|----------------|--------|---------------|-----------------|--------------|----------------|
|                               |                             |                      | Height.        | Date.  | Height.       | Date.           |              |                |
| <i>Allegheny River.</i>       | <i>Miles.</i>               | <i>Feet.</i>         | <i>Feet.</i>   |        | <i>Feet.</i>  |                 | <i>Feet.</i> | <i>Feet.</i>   |
| Warren, Pa.....               | 177                         | 14                   | 2.3            | 17,18  | 0.0           | 1               | 1.2          | 2.3            |
| Oil City, Pa.....             | 123                         | 13                   | 3.4            | 17     | 1.3           | 29,30           | 2.1          | 2.1            |
| Parker, Pa.....               | 73                          | 30                   | 3.2            | 17     | 1.1           | 30              | 1.9          | 2.1            |
| <i>Monongahela River.</i>     |                             |                      |                |        |               |                 |              |                |
| Weston, W. Va.....            | 161                         | 18                   | 0.0            | 1-4    | -0.8          | 14-20           | -0.5         | 0.8            |
| Fairmont, W. Va.....          | 119                         | 25                   | 2.2            | 21     | 0.2           | 1               | 1.0          | 2.0            |
| Greensboro, Pa.....           | 81                          | 18                   | 8.2            | 3,21   | 6.5           | 1               | 7.4          | 1.7            |
| Lock No. 4, Pa.....           | 40                          | 28                   | 10.0           | 3,21   | 6.1           | 1               | 8.9          | 3.9            |
| <i>Conemaugh River.</i>       |                             |                      |                |        |               |                 |              |                |
| Johnstown, Pa.....            | 64                          | 7                    | 3.8            | 2      | 1.6           | 10,11,17,18     | 2.1          | 2.2            |
| <i>Red Bank Creek.</i>        |                             |                      |                |        |               |                 |              |                |
| Brookville, Pa.....           | 35                          | 8                    | 1.6            | 12     | 1.0           | 3-11,28-30      | 1.2          | 0.6            |
| <i>Beaver River.</i>          |                             |                      |                |        |               |                 |              |                |
| Ellwood Junction, Pa.....     | 10                          | 14                   | 0.7            | 15-17  | 0.4           | 51,2,14,28-30   | 0.5          | 0.3            |
| <i>Great Kanawha River.</i>   |                             |                      |                |        |               |                 |              |                |
| Charleston, W. Va.....        | 61                          | 30                   | 6.9            | 3-5,28 | 5.0           | 9               | 6.5          | 1.9            |
| <i>New River.</i>             |                             |                      |                |        |               |                 |              |                |
| Hinton, W. Va.....            | 95                          | 14                   | 1.7            | 3      | 1.1           | 11-28           | 1.2          | 0.6            |
| <i>Cheat River.</i>           |                             |                      |                |        |               |                 |              |                |
| Rowlesburg, W. Va.....        | 36                          | 14                   | 3.3            | 3      | -1.2          | 1               | 2.0          | 4.5            |
| <i>Ohio River.</i>            |                             |                      |                |        |               |                 |              |                |
| Pittsburg, Pa.....            | 966                         | 22                   | 7.1            | 3      | 4.5           | 8               | 6.0          | 2.6            |
| Davis Island Dam, Pa.....     | 960                         | 25                   | 6.5            | 3,4    | 2.8           | 1               | 4.8          | 3.7            |
| Wheeling, W. Va.....          | 875                         | 36                   | 7.3            | 4      | 1.8           | 1               | 5.3          | 5.5            |
| Parkersburg, W. Va.....       | 785                         | 36                   | 7.8            | 6      | 2.2           | 1               | 5.9          | 5.6            |
| Point Pleasant, W. Va.....    | 703                         | 39                   | 6.5            | 7      | 1.2           | 1,2             | 4.0          | 5.3            |
| Catlettsburg, Ky.....         | 651                         | 50                   | 8.8            | 8      | 0.8           | 1               | 4.7          | 8.0            |
| Portsmouth, Ohio.....         | 612                         | 50                   | 8.8            | 9      | 2.2           | 1               | 5.6          | 6.6            |
| Cincinnati, Ohio.....         | 499                         | 50                   | 9.3            | 10,26  | 3.4           | 2               | 6.4          | 5.9            |
| Louisville, Ky.....           | 367                         | 28                   | 5.8            | 12     | 3.5           | 21-22           | 4.4          | 2.3            |
| Evansville, Ind.....          | 184                         | 35                   | 5.3            | 16     | 1.6           | 1               | 3.4          | 3.7            |
| Paducah, Ky.....              | 47                          | 40                   | 2.5            | 30     | 0.5           | 5-10            | 1.4          | 2.0            |
| Cairo, Ill.....               | 1,073                       | 45                   | 7.3            | 27,28  | 3.6           | 3-5             | 5.6          | 3.7            |
| <i>Muskingum River.</i>       |                             |                      |                |        |               |                 |              |                |
| Zanesville, Ohio.....         | 70                          | 20                   | 6.3            | 19     | 6.0           | 4-7,11-17       | 6.1          | 0.3            |
| <i>Miami River.</i>           |                             |                      |                |        |               |                 |              |                |
| Dayton, Ohio.....             | 69                          | 18                   | 1.1            | 5,26   | 0.5           | 30              | 0.8          | 0.6            |
| <i>Wabash River.</i>          |                             |                      |                |        |               |                 |              |                |
| Mount Carmel, Ill.....        | 50                          | 15                   | 2.7            | 28     | 0.9           | 1               | 1.7          | 1.8            |
| <i>Licking River.</i>         |                             |                      |                |        |               |                 |              |                |
| Falmouth, Ky.....             | 30                          | 25                   | 1.8            | 24,25  | 1.0           | 17-22           | 1.3          | 0.8            |
| <i>Clinch River.</i>          |                             |                      |                |        |               |                 |              |                |
| Speers Ferry, Va.....         | 156                         | 20                   | 0.1            | 6      | -0.7          | 26              | -0.3         | 0.8            |
| Clinton, Tenn.....            | 46                          | 25                   | 2.6            | 3,4    | 1.4           | 21,22           | 2.0          | 1.2            |
| <i>Tennessee River.</i>       |                             |                      |                |        |               |                 |              |                |
| Knoxville, Tenn.....          | 614                         | 28                   | -0.1           | 3-5    | -1.3          | 21-23           | -0.8         | 1.2            |
| Kingston, Tenn.....           | 534                         | 25                   | 1.0            | 4,5    | 0.6           | 15,16           | 0.8          | 0.4            |
| Chattanooga, Tenn.....        | 430                         | 33                   | 1.9            | 28     | 0.8           | 22              | 1.2          | 1.1            |
| Bridgeport, Ala.....          | 390                         | 24                   | 0.7            | 27-29  | 0.1           | 1,14-24         | 0.3          | 0.6            |
| Florence, Ala.....            | 220                         | 16                   | 0.8            | 29,30  | -0.1          | 1-6             | 0.1          | 0.9            |
| Riverton, Ala.....            | 190                         | 25                   | -0.1           | 30     | -2.0          | 2,3             | -1.5         | 1.9            |
| Johnsonville, Tenn.....       | 94                          | 21                   | 1.3            | 30     | 0.0           | 3-7             | 0.3          | 1.3            |
| <i>Cumberland River.</i>      |                             |                      |                |        |               |                 |              |                |
| Burnside, Ky.....             | 434                         | 50                   | 0.1            | 27-30  | -0.4          | 1,2,5-11        | -0.2         | 0.5            |
| Carthage, Tenn.....           | 175                         | 40                   | 0.7            | 28-30  | 0.2           | 6-9,13,14,19,21 | 0.3          | 0.5            |
| Nashville, Tenn.....          | 257                         | 40                   | 1.1            | 30     | 0.7           | 14              | 0.8          | 0.4            |
| <i>Arkansas River.</i>        |                             |                      |                |        |               |                 |              |                |
| Wichita, Kans.....            | 726                         | 10                   | 2.3            | 1      | 1.9           | 6,17-19         | 2.0          | 0.4            |
| Webbers Falls, Ind. T.....    | 413                         | 23                   | 4.5            | 26     | 1.4           | 13-17,19        | 2.2          | 3.1            |
| Fort Smith, Ark.....          | 351                         | 22                   | 6.8            | 27,28  | 2.1           | 20              | 3.5          | 4.7            |
| Dardanelle, Ark.....          | 256                         | 21                   | 7.0            | 24     | 1.5           | 16-19           | 2.9          | 5.5            |
| Little Rock, Ark.....         | 176                         | 23                   | 7.5            | 26     | 2.3           | 1               | 3.7          | 5.2            |
| <i>White River.</i>           |                             |                      |                |        |               |                 |              |                |
| Newport, Ark.....             | 150                         | 26                   | 5.5            | 26     | 1.2           | 1,17,18         | 2.7          | 4.3            |
| <i>Yazoo River.</i>           |                             |                      |                |        |               |                 |              |                |
| Yazoo City, Miss.....         | 80                          | 25                   | -1.9           | 30     | -2.6          | 14-24           | -2.5         | 0.7            |
| <i>Red River.</i>             |                             |                      |                |        |               |                 |              |                |
| Arthur City, Tex.....         | 80                          | 25                   | 28.6           | 25     | 5.5           | 20              | 11.1         | 28.1           |
| Fulton, Ark.....              | 688                         | 27                   | 26.0           | 27,28  | 3.8           | 21              | 11.2         | 22.2           |
| Shreveport, La.....           | 565                         | 28                   | 13.3           | 30     | -0.7          | 1-3             | 4.4          | 14.0           |
| Alexandria, La.....           | 449                         | 29                   | 9.2            | 30     | -2.6          | 3               | 0.1          | 11.8           |
| <i>Ouachita River.</i>        |                             |                      |                |        |               |                 |              |                |
| Camden, Ark.....              | 340                         | 39                   | 5.2            | 25     | 2.9           | 2-4,18          | 3.4          | 2.3            |
| Monroe, La.....               | 100                         | 40                   | 1.4            | 30     | 0.0           | 1-27            | 0.1          | 1.4            |
| <i>Atchafalaya River.</i>     |                             |                      |                |        |               |                 |              |                |
| Melville, La.....             | 100*                        | 31                   | 7.3            | 30     | 1.6           | 6,7             | 3.7          | 5.7            |
| <i>Susquehanna River.</i>     |                             |                      |                |        |               |                 |              |                |
| Wilkesbarre, Pa.....          | 178                         | 14                   | 5.0            | 5,6    | -2.0          | 1               | 1.5          | 7.0            |
| Harrisburg, Pa.....           | 70                          | 17                   | 4.5            | 5      | 0.5           | 1               | 2.5          | 4.0            |
| <i>W. Br. of Susquehanna.</i> |                             |                      |                |        |               |                 |              |                |
| Williamsport, Pa.....         | 35                          | 30                   | 3.8            | 2-4    | 0.4           | 1               | 2.6          | 3.4            |
| <i>Juniata River.</i>         |                             |                      |                |        |               |                 |              |                |
| Huntingdon, Pa.....           | 80                          | 24                   | 4.8            | 2      | 3.0           | 5-23,29,30      | 3.2          | 1.8            |
| <i>Potomac River.</i>         |                             |                      |                |        |               |                 |              |                |
| Harpers Ferry, W. Va.....     | 170                         | 16                   | 2.7            | 4      | 0.3           | 1               | 1.6          | 2.4            |
| <i>James River.</i>           |                             |                      |                |        |               |                 |              |                |
| Lynchburg, Va.....            | 257                         | 18                   | 2.2            | 3      | 0.1           | 19-23,27-30     | 0.4          | 2.1            |
| Richmond, Va.....             | 110                         | 12                   | 0.6            | 24     | -2.8          | 12              | -1.1         | 3.4            |
| <i>Roanoke River.</i>         |                             |                      |                |        |               |                 |              |                |
| Weldon, N. C.....             | 90                          | 40                   | 13.8           | 5      | 7.8           | 21,22           | 8.8          | 6.0            |
| <i>Cape Fear River.</i>       |                             |                      |                |        |               |                 |              |                |
| Fayetteville, N. C.....       | 100                         | 38                   | 21.4           | 2      | 3.3           | 22,23           | 6.5          | 18.1           |
| <i>Lumber River.</i>          |                             |                      |                |        |               |                 |              |                |
| Fairbluff, N. C.....          | 10                          | 6                    | 4.5            | 13,14  | 2.0           | 5               | 3.2          | 2.5            |
| <i>Edisto River.</i>          |                             |                      |                |        |               |                 |              |                |
| Edisto, S. C.....             | 75                          | 17                   | 5.3            | 6,7    | 3.3           | 23-25           | 4.2          | 2.0            |
| <i>Pedee River.</i>           |                             |                      |                |        |               |                 |              |                |
| Cheraw, S. C.....             | 145                         | 27                   | 10.2           | 1      | 1.1           | 22,23           | 3.0          | 9.1            |
| <i>Black River.</i>           |                             |                      |                |        |               |                 |              |                |
| Kingstree, S. C.....          | 60                          | 12                   | 4.5            | 21-23  | 1.6           | 1               | 3.5          | 2.9            |
| <i>Lynch Creek.</i>           |                             |                      |                |        |               |                 |              |                |
| Effingham, S. C.....          | 35                          | 12                   | 10.4           | 9      | 4.0           | 1,18,21         | 5.3          | 6.4            |

Heights of rivers referred to zeros of gages—Continued.

| Stations.                   | Distance to mouth of river. | Danger line on gage. | Highest water. |           | Lowest water. |              | Mean stage.  | Monthly range. |
|-----------------------------|-----------------------------|----------------------|----------------|-----------|---------------|--------------|--------------|----------------|
|                             |                             |                      | Height.        | Date.     | Height.       | Date.        |              |                |
| <i>Santee River.</i>        | <i>Miles.</i>               | <i>Feet.</i>         | <i>Feet.</i>   |           | <i>Feet.</i>  |              | <i>Feet.</i> | <i>Feet.</i>   |
| St. Stephens, S. C.....     | 50                          | 12                   | 7.0            | 5, 6      | 0.3           | 25           | 3.2          | 6.7            |
| <i>Congaree River.</i>      |                             |                      |                |           |               |              |              |                |
| Columbia, S. C.....         | 37                          | 15                   | 2.5            | 1         | -0.2          | 12           | 0.6          | 2.7            |
| <i>Wateree River.</i>       |                             |                      |                |           |               |              |              |                |
| Camden, S. C.....           | 45                          | 24                   | 14.0           | 1         | 2.9           | 21           | 5.1          | 12.1           |
| <i>Waccamaw River.</i>      |                             |                      |                |           |               |              |              |                |
| Conway, S. C.....           | 40                          | 7                    | 2.8            | 9, 10, 27 | 1.6           | 2, 30        | 2.3          | 1.2            |
| <i>Savannah River.</i>      |                             |                      |                |           |               |              |              |                |
| Calhoun Falls, S. C.....    | 347                         |                      | 4.0            | 26        | 2.0           | 14, 17-20    | 2.4          | 2.0            |
| Augusta, Ga.....            | 268                         | 32                   | 11.3           | 27        | 4.9           | 13           | 6.2          | 6.4            |
| <i>Broad River.</i>         |                             |                      |                |           |               |              |              |                |
| Carlton, Ga.....            | 30                          |                      | 3.7            | 27        | 2.0           | 5-14, 17-22  | 2.3          | 1.7            |
| <i>Flint River.</i>         |                             |                      |                |           |               |              |              |                |
| Albany, Ga.....             | 80                          | 30                   | 2.6            | 30        | 0.2           | 13           | 0.9          | 2.4            |
| <i>Chattahoochee River.</i> |                             |                      |                |           |               |              |              |                |
| West Point, Ga.....         | 239                         | 30                   | 4.2            | 30        | 1.9           | 3-14, 22     | 2.3          | 2.3            |
| <i>Cosa River.</i>          |                             |                      |                |           |               |              |              |                |
| Rome, Ga.....               | 225                         | 30                   | 3.0            | 27        | 0.3           | 7-13         | 0.9          | 2.7            |
| Gadsden, Ala.....           | 144                         | 18                   | 3.0            | 27, 28    | -0.8          | 12-15, 13-22 | 0.1          | 3.8            |

Heights of rivers referred to zeros of gages—Continued.

| Stations.                   | Distance to mouth of river. | Danger line on gage. | Highest water. |       | Lowest water. |             | Mean stage.  | Monthly range. |
|-----------------------------|-----------------------------|----------------------|----------------|-------|---------------|-------------|--------------|----------------|
|                             |                             |                      | Height.        | Date. | Height.       | Date.       |              |                |
| <i>Alabama River.</i>       | <i>Miles.</i>               | <i>Feet.</i>         | <i>Feet.</i>   |       | <i>Feet.</i>  |             | <i>Feet.</i> | <i>Feet.</i>   |
| Montgomery, Ala.....        | 235                         | 35                   | 4.0            | 28    | -0.1          | 7, 16       | 0.6          | 4.1            |
| Selma, Ala.....             | 212                         | 35                   | 4.8            | 30    | -1.3          | 16-18       | -0.2         | 6.1            |
| <i>Tombigbee River.</i>     |                             |                      |                |       |               |             |              |                |
| Columbus, Miss.....         | 285                         | 33                   | -0.2           | 30    | -3.7          | 2, 5, 6, 18 | -2.9         | 3.5            |
| Demopolis, Ala.....         | 155                         | 35                   | 5.6            | 30    | -3.6          | 10-21       | -2.5         | 9.2            |
| <i>Black Warrior River.</i> |                             |                      |                |       |               |             |              |                |
| Tuscaloosa, Ala.....        | 90                          | 43                   | 10.5           | 28    | -1.0          | 1-20        | 0.3          | 11.5           |
| <i>Columbia River.</i>      |                             |                      |                |       |               |             |              |                |
| Umatilla, Ore.....          | 270                         | 25                   | 6.1            | 24    | 4.0           | 7, 8        | 4.9          | 2.1            |
| The Dalles, Ore.....        | 166                         | 40                   | 9.9            | 30    | 5.4           | 8           | 6.9          | 4.5            |
| <i>Willamette River.</i>    |                             |                      |                |       |               |             |              |                |
| Albany, Ore.....            | 99                          | 20                   | 14.9           | 30    | 2.6           | 6, 7        | 3.7          | 12.3           |
| Portland, Ore.....          | 10                          | 15                   | 12.5           | 30    | 3.2           | 1, 2        | 5.6          | 9.3            |
| <i>Sacramento River.</i>    |                             |                      |                |       |               |             |              |                |
| Red Bluff, Cal.....         | 241                         | 23                   | 13.0           | 28    | 0.0           | 1           | 4.8          | 13.0           |
| Sacramento, Cal.....        | 70                          | 29                   | 19.4           | 12    | 10.4          | 8, 9        | 15.6         | 9.0            |

\* Distance to Gulf of Mexico.

## CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Rainfall is expressed in inches.

**Alabama.**—The mean temperature was 55.8°, or 2.1° above normal; the highest was 83°, at Healing Springs on the 16th, and the lowest, 18°, at Hamilton on the 4th. The average precipitation was 3.04, or 0.06 below normal; the greatest monthly amount, 6.55, occurred at Wilson, and the least, 1.01, at Highland Home.—*F. P. Chaffee.*

**Arizona.**—The mean temperature was 54.5°, or 2.2° above normal; the highest was 97°, at Arivaca on the 7th, and the lowest, 14°, at Flagstaff on the 21st. The average precipitation was 0.65, or 0.49 below normal; the greatest monthly amount, 2.07, occurred at Yarnell, while none fell at several stations.—*W. G. Burns.*

**Arkansas.**—The mean temperature was 54.3°, or 3.8° above normal; the highest was 87°, at Prescott on the 7th, and the lowest, 17°, at Pond on the 3d. The average precipitation was 2.61, or 1.51 below normal; the greatest monthly amount, 5.86, occurred at Hardy, and the least, 1.40, at Lee Brand.

The wheat crop is in fine condition for this season of the year, and reports indicate a larger acreage has been sown than usual.—*E. B. Richards.*

**California.**—The mean temperature for the State, obtained by weighting the reports from 293 stations, so that equal areas have about the same weight, was 52.1°, which was 0.8° above the November normal for the State, as determined from 209 records; the highest was 105°, at Ogilby, San Diego County, on the 11th; the lowest, 7°, at Bodie, Mono County, on the 16th. The average precipitation for the State, as determined by the records of 309 stations, was 3.82; the excess, as indicated by reports from 217 stations, which have normals, was 2.00; the greatest monthly amount, 32.85, occurred at Upper Mattole, Humboldt County, while none fell at Ogilby, San Diego County.—*Alexander G. McAdie.*

**Colorado.**—The mean temperature was 38.9°, or 5.2° above normal; the highest was 78°, at Lamar on the 9th and at Wray on the 14th, and the lowest, 11° below zero, at Troutvale on the 19th. The average precipitation was 0.77, or practically normal; the greatest monthly amount, 3.72, occurred at Santa Clara, while none fell at Laporte, Waterdale, Moraine, and Gypsum.—*F. H. Brandenburg.*

**Florida.**—The mean temperature was 65.7°, or 0.5° above normal; the highest was 87°, at Ocala on the 2d, and the lowest, 34°, at Dalkeith and De Funiak Springs on the 4th. The average precipitation was 0.82, or 1.91 below normal; the greatest monthly amount, 4.99, occurred at Pensacola, and the least, trace, at New Smyrna.—*A. J. Mitchell.*

**Georgia.**—The mean temperature was 55.9°, or 1.6° above normal; the highest was 86°, at Morgan on the 1st, and the lowest, 24°, at Greenbush and Ramsey on the 5th. The average precipitation was 2.04, or 0.74 below normal; the greatest monthly amount, 4.05, occurred at Greenbush, and the least, 0.37, at Albany.—*J. B. Marbury.*

**Idaho.**—The mean temperature was 40.6°, or 7.8° above normal; the highest was 85°, at American Falls on the 6th, and the lowest, 8°, at

Chesterfield on the 26th. The average precipitation was 2.12, or 0.30 below normal; the greatest monthly amount, 10.42, occurred at Priest River, and the least, 0.21, at Hagerman.—*S. M. Blandford.*

**Illinois.**—The mean temperature was 46.7°, or 6.5° above normal; the highest was 80°, at Centralia on the 11th, and the lowest, 13°, at Scales Mound on the 4th. The average precipitation was 1.83, or 1.02 below normal; the greatest monthly amount, 3.59, occurred at Paris, and the least, 0.56, at Dixon.

Winter wheat throughout the central and southern districts is generally in splendid condition; it has good root growth and in some instances too heavy top growth, requiring pasturing. In the northern district little wheat was sown, but that is in good condition.—*C. E. Linney.*

**Indiana.**—The mean temperature was 46.0°, or 4.8° above normal; the highest was 75°, at Connersville and Vevay on the 10th and at Washington on the 17th, and the lowest, 19°, at Fairmount and Winamac on the 6th. The average precipitation was 2.54, or 1.25 below normal; the greatest monthly amount, 4.41, occurred at Paoli, and the least, 0.78, at Culver.

Warm weather and good local rains were very favorable for all crops. Wheat grew rapidly; it is in good condition for wintering, being deep rooted and healthy. Farm work progressed with very few interruptions.—*C. F. R. Wappenhans.*

**Iowa.**—The mean temperature was 43.9°, or about 10.0° above normal; the highest was 86°, at Burlington on the 17th, and the lowest, 8°, at Pringhar on the 2d. The average precipitation was 1.20, or below normal; the greatest monthly amount, 2.97, occurred at Belle Plaine, and the least, 0.13, at Estherville.—*J. R. Sage, Director; G. M. Chappel, Assistant.*

**Kansas.**—The mean temperature was 48.4°, or about 7.0 above normal; the highest was 81°, at Englewood on the 9th, at Fallriver on the 10th, and at Chanute on the 15th, and the lowest, 1°, at Colby on the 2d. The average precipitation was 1.34, or about 0.40 above normal; the greatest monthly amount, 2.75, occurred at Columbus, and the least, 0.21, at Campbell.—*T. B. Jennings.*

**Kentucky.**—The mean temperature was 49.8°, or about 4.0° above normal; the highest was 79°, at Princeton on the 13th, and the lowest, 20°, at Loretto on the 3d. The average precipitation was 2.12, or 1.50 below normal; the greatest monthly amount, 3.97, occurred at Henderson, and the least, 0.88, at Alpha.

Owing to the droughty conditions that prevailed in the early autumn, plowing was badly delayed and the bulk of the wheat crop was sown later than usual. It was feared by many that it would not get sufficiently well rooted to stand severe winter weather, but it made splendid progress during November and is in excellent condition.—*H. B. Hersey.*

**Louisiana.**—The mean temperature was 60.0°, or 1.9° above normal; the highest was 90°, at White Sulphur Springs on the 1st, and the lowest, 21°, at Alexandria, Oxford, and Plain Dealing on the 4th. The average precipitation was 2.30, or 1.84 below normal; the greatest monthly amount, 5.67, occurred at Oak Ridge, and the least, 1.17, at Houma.—*W. T. Blythe.*

**Maryland and Delaware.**—The mean temperature was 45.3°, or 0.2° above normal; the highest was 75°, at Milford, Del., on the 1st, and the lowest, 12°, at Sunnyside, Md., on the 7th, 27th, and 28th. The average precipitation was 1.98, or 1.31 below normal; the greatest monthly amount, 3.65, occurred at Bachmans Valley, Md., and the least, 0.68, at Princess Anne, Md.



The mild weather conditions favored rapid growth in wheat, and, with but few exceptions, the crop was in good condition.—*F. J. Wals.*

**Michigan.**—The mean temperature was 40.6°, or 5.5° above normal; the highest was 68°, at St. Ignace on the 6th and at Grand Rapids on the 7th, and the lowest, 11°, at Iron River on the 3d. The average precipitation was 1.20, or 1.62 below normal; the greatest monthly amount, 2.79, occurred at Ball Mountain, and the least, 0.02, at Baraga.—*C. F. Schneider.*

**Minnesota.**—The mean temperature was 39.6°, or about 12.0° above normal; the highest was 80°, at Bemidji on the 15th, and the lowest, 9°, at Detroit City on the 2d. The average precipitation was 0.63, or 0.38 below normal; the greatest monthly amount, 2.55, occurred at Willmar, and the least, 0.16, at Brainerd.—*T. S. Outram.*

**Mississippi.**—The mean temperature was 66.6°, or about 2.0° above normal; the highest was 87°, at Americus on the 2d, and the lowest, 31°, at Pontotoc on the 6th. The average precipitation was 2.42, or about 1.00 below normal; the greatest monthly amount, 5.82, occurred at Americus, and the least, 0.85, at Vicksburg.—*H. E. Wilkinson.*

**Missouri.**—The mean temperature was 49.5°, or 7.6° above normal; the highest was 82°, at Mount Vernon on the 16th, and the lowest, 16°, at Bethany on the 3d and 4th, at Liberty and Pickering on the 4th, and at Potosi on the 5th. The average precipitation was 1.90, or 0.56 below normal; the greatest monthly amount, 5.29, occurred at Willowsprings, and the least, 0.69, at Windsor.

The month was an ideal one for farm work and could hardly have been more favorable for the wheat crop, which was reported in excellent condition in nearly every county. As a result of the unusually warm weather, wheat in some districts made very rank growth, and many fields were pastured.—*A. E. Hackett.*

**Montana.**—The mean temperature was 39.6°, or 9.9° above normal; the highest was 80°, at Red Lodge on the 10th, and the lowest, 7°, at Fort Logan on the 25th, at Glasgow on the 28th, and at Kipp on the 30th. The average precipitation was 0.44, or 0.70 below normal; the greatest monthly amount, 2.84, occurred at Troy, while none fell at Martinsdale.—*E. J. Glass.*

**Nebraska.**—The mean temperature was 43.4°, or 8.7° above normal; the highest was 80°, at Fairbury on the 18th, at Palmer on the 11th, at Superior on the 10th and 16th, and at Westpoint on the 17th, and the lowest, 1° below zero, at Lodgepole on the 2d. The average precipitation was 0.88, or 0.18 above normal; the greatest monthly amount, 2.75, occurred at Bartley, while none fell at Merriman and Seneca.—*G. A. Lonsdale.*

**Nevada.**—The mean temperature was 41.0°, or about 2.0° above normal; the highest was 73°, at Las Vegas on the 9th, and the lowest, 3°, at Fenelon on the 25th. The average precipitation was 0.51, or about 0.25 below normal; the greatest monthly amount, 3.41, occurred at Lewers Ranch, while none fell at Battle Mountain and Toano.—*J. H. Smith.*

**New England.**—The mean temperature was 37.1°, or normal; the highest was 71°, at Vineyard Haven, Mass., on the 1st, and the lowest, 5° below zero, at Enosburg Falls, Vt., on the 12th. The average precipitation was 2.16, or 1.76 below normal; the greatest monthly amount, 5.65, occurred at Bar Harbor, Me., and the least, 1.04, at Block Island, R. I.

The weather was highly favorable for work on the farm, but farmers continued to be greatly inconvenienced by the scarcity of water for stock, being compelled in many localities to haul the supply from streams and rivers.—*J. W. Smith.*

**New Jersey.**—The mean temperature was 44.0°, or 0.7° above normal; the highest was 71°, at Toms River and Vineland on the 11th, and the lowest, 17°, at Belvidere on the 14th, 26th, and 27th, and at Rivervale on the 14th. The average precipitation was 2.29, or 1.37 below normal; the greatest monthly amount, 4.32, occurred at New Brunswick, and the least, 0.72, at Ocean City.—*E. W. McGann.*

**New Mexico.**—The mean temperature was 39.7°, or 1.5° above normal; the highest was 82°, at Mesilla Park on several days, and the lowest, 5°, at Folsom on the 2d. The average precipitation was 0.78, or 0.21 above normal; the greatest monthly amount, 3.21, occurred at Roswell, while none fell at Engle and Strauss.—*R. M. Hardinge.*

**New York.**—The mean temperature was 38.6°, or 0.9° above normal; the highest was 67°, at Cutchogue on the 1st and at Ogdensburg on the 6th, and the lowest, 5°, at Number Four on the 13th. The average precipitation was 2.18, or 1.05 below normal; the greatest monthly amount, 3.58, occurred at Addison, and the least, 0.49, at Lockport.

The month was very mild and most favorable for grains. Winter wheat and rye were exceptionally fine and promising, with a good stand, large growth, healthy color, and firm roots. Wheat is larger and in better condition for winter weather than it has been at this season for several years. The acreage is somewhat less than the average.—*R. G. Allen.*

**North Carolina.**—The mean temperature was 51.0°, or 1.3° above normal; the highest was 78°, at several stations on various dates, and the lowest, 20°, at Waynesville on the 5th and at Linville on the 7th. The average precipitation was 1.54, or 1.72 below normal; the greatest monthly amount, 3.83, occurred at Highlands, and the least, 0.24, at Lenoir.

The weather was highly favorable for farm work and for completing the seeding of winter wheat. Fine stands and vigorous growths were generally secured. In general the condition at the close of the month was excellent.—*C. F. von Herrmann.*

**North Dakota.**—The mean temperature was 36.3°, or 16.6° above normal; the highest was 68°, at Power on the 3d, at Devils Lake, Forman, Melville, and Bismarck on the 5th, and the lowest, 2°, at Gallatin on the 2d. The average precipitation was 0.32, or 0.63 below normal; the greatest monthly amount, 0.85, occurred at Napoleon, and the least, trace, at Buxton, Dunseith, Grafton, Hannaford, Oakdale, Portal, and Powell.—*B. H. Bronson.*

**Ohio.**—The mean temperature was 43.9°, or 3.2° above normal; the highest was 79°, at Richwood on the 11th, and the lowest, 18°, at Bladensburg on the 7th and at Milligan, Pataskala, and Warsaw on the 27th. The average precipitation was 1.72, or 1.60 below normal; the greatest monthly amount, 3.04, occurred at Kenton, and the least, 0.62, at Cleveland.

Wheat in most northern counties is in good condition, but in most southern counties, particularly in the southwest, the damage by hessian fly is very serious.—*J. Warren Smith.*

**Oklahoma.**—The mean temperature was 52.9°, the highest was 90°, at Kingfisher on the 9th, and the lowest, 18°, at Beaver on the 3d. The average precipitation was 4.01; the greatest monthly amount, 7.90, occurred at Fort Sill, and the least, 1.47, at Tulsa.

Sufficient water is now in the soil to make a good crop of wheat without spring rains. Wheat is generally reported as being in the most promising condition since the settlement of the Territory.—*C. M. Strong.*

**Oregon.**—The mean temperature, was 48.2°, or 4.8 above normal; the highest was 77°, at Dayville on the 14th, and the lowest, 5°, at Riverside on the 4th. The average precipitation was 9.08, or 2.84 above normal; the greatest monthly amount, 35.81, occurred at Glenora, Tillamook County, and the least, 0.75, at Silverlake, Lake County.—*B. S. Pague.*

**Pennsylvania.**—The mean temperature was 41.5°, or 1.1° above normal; the highest was 72°, at Hawthorn on the 19th, and the lowest, 8°, at Shinglehouse on the 12th. The average precipitation was 2.66, or 0.96 below normal; the greatest monthly amount, 4.86, occurred at Davis Island Dam, and the least, 0.61, at Franklin.—*T. F. Townsend.*

**South Carolina.**—The mean temperature was 55.0°, or 1.0 above normal; the highest was 86°, at Shaws Fork on the 15th and the lowest, 22°, at Spartanburg on the 7th. The average precipitation was 2.41, or 0.41 below normal; the greatest monthly amount, 8.10, occurred at Georgetown, and the least, 0.72, at Florence.—*J. W. Bauer.*

**South Dakota.**—The mean temperature was 40.7°, or about 10° above normal; the highest was 76°, at Alexandria on the 16th, and the lowest, 1° below zero, at Menno on the 2d. The average precipitation was 0.38, or 0.21 below normal; the greatest monthly amount, 1.52, occurred at Tyndall, while none fell at Forest City.—*S. W. Glenn.*

**Tennessee.**—The mean temperature was 51.7°, or about 4.0° above normal; the highest was 82°, at Madison on the 10th, and the lowest, 14°, at Erasmus on the 5th. The average precipitation was 2.18, or 1.54 below normal; the greatest monthly amount, 4.59, occurred at Sewanee, and the least, 0.70, at Union City.

The wheat acreage is reported to be the largest in many years, and the favorable soil and weather conditions promoted good germination and rapid growth, so that the prospects at the end of the month were very flattering.—*H. C. Bate.*

**Texas.**—The mean temperature, determined by comparison of 45 stations distributed throughout the State, was 1.8° above the normal; there was a slight deficiency over the Rio Grande Valley and a general excess elsewhere, amounting to more than 3.0° over the northwest portion of the State; the highest was 90°, at Hulen on the 11th, and the lowest, 17°, at Mount Blanco on the 3d. The average precipitation, determined by comparison of 54 stations distributed throughout the State, was 0.76 above normal; nearly normal conditions prevailed over west Texas, the eastern portion of north and central Texas and the coast district, while over the other sections of the State there was a general excess, ranging from 1.00 to 4.97, with the greatest in the vicinity of Wichita Falls; the greatest monthly amount, 6.70, occurred at Wichita Falls, and the least, trace, at Fort Ringgold.

Much wheat was sown during November and seeding was completed over the southern portion of the wheat belt early in the month, but over the northwest portion sowing was retarded by the showery weather during the last decade of the month, and is not yet completed; heavy local rains in a few localities over the northwest portion washed up some wheat, otherwise conditions were beneficial to the crop. The crop as a whole is late, but doing well, and was reported in excellent condition in most localities at the close of the month.—*I. M. Cline.*

**Utah.**—The mean temperature was 40.5°, or 4.5° above normal; the highest was 82°, at Croydon on the 7th, and the lowest, 3° below zero, at Woodruff on the 26th. The average precipitation was 0.70, or 0.13 below normal; the greatest monthly amount, 2.30, occurred at Croydon, and the least, trace, at Cisco, Loa, and Terrace.—*L. H. Murdoch.*

**Virginia.**—The mean temperature was 47.7°, or nearly normal; the

highest was 83°, at Rocky Mount on the 2d, and the lowest, 16° at Burkes Garden on the 7th. The average precipitation was 1.24, or 1.54 below normal; the greatest monthly amount, 2.96, occurred at Miller School, and the least, 0.38, at Cliftonforge.

The progress of the crops and farm work was highly satisfactory, reports from all portions of the State where winter wheat is grown indicate this crop to be making excellent progress and as being generally in advance of its normal condition at this time.—E. A. Evans.

**Washington.**—The mean temperature was 50.4°, or 6.5° above normal, and the highest ever recorded since the establishment of the Washington service in 1890; the highest was 72°, at Walla Walla on the 14th, and the lowest, 25°, at Moxee on the 5th, at Usk on the 15th, and at Ellensburg on the 22d. The average precipitation was 8.82, or 2.77 above normal; the greatest monthly amount, 29.87, occurred at Neah, and the least, 0.43, at Connell.—A. B. Wollaber.

**West Virginia.**—The mean temperature was 45.6°, or 1.6° above normal; the highest was 83°, at Uppertrack on the 2d, and the lowest, 14°, at Dayton on the 26th. The average precipitation was 1.93, or 0.86 below normal; the greatest monthly amount, 3.49, occurred at Rowelsburg, and the least, 0.48, at Oldfields.—E. C. Vose.

**Wisconsin.**—The mean temperature was 40.3°, or 8.2° above normal; the highest was 72°, at Westbend on the 21st, and the lowest, 10°, at Osceola and Valley Junction on the 3d. The average precipitation was 1.07, or 0.56 below normal; the greatest monthly amount, 3.64, occurred at Sharon, and the least, trace, at Florence.—W. M. Wilson.

**Wyoming.**—The mean temperature was 36.4°, or 4.6° above normal; the highest was 80°, at Burlington on the 16th, and the lowest, 4° below zero, at Jackson. The average precipitation was 0.13, or less than one-fifth of the normal; the greatest monthly amount, 0.91, occurred at Rawlins, while none fell at several stations.—W. S. Pauser.

## SPECIAL CONTRIBUTIONS.

### OBSERVATIONS AT HONOLULU.

Through the kind cooperation of Mr. Curtis J. Lyons, Meteorologist to the Government Survey, the monthly report of meteorological conditions at Honolulu is now made partly in accordance with the new form, No. 1040, and the arrangement of the columns, therefore, differs from those previously published.

#### Meteorological observations at Honolulu, November, 1899.

The station is at 21° 18' N., 157° 50' W.  
Pressure is corrected for temperature and reduced to sea level, and the gravity correction, -0.05, has been applied.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 12, or Beaufort scale. Two directions of wind, or values of wind force or amounts of cloudiness, connected by a dash, indicate change from one to the other.

The rainfall for twenty-four hours has always been measured at 10:29 p. m., not 1 p. m., Greenwich time, on the respective dates.

The rain gauge, 8 inches in diameter, is 1 foot above ground. Thermometer, 9 feet above ground. Ground is 43 feet, and the barometer 50 feet above sea level.

| Date.          | Pressure at sea level. |           | Tempera-<br>ture. |          | During twenty-four hours preceding 1 p. m., Green-<br>wich time, or 2:29 a. m., Honolulu time. |                       |                          |        |                          |                         |          | Total rainfall at 9 a.<br>m., local time. |       |
|----------------|------------------------|-----------|-------------------|----------|--|-----------------------|--------------------------|--------|--------------------------|-------------------------|----------|---|-------|
|                | Dry bulb.              | Wet bulb. | Maximum.          | Minimum. | Dew-point.   | Relative<br>humidity. | Prevailing<br>direction. | Force. | Average cloudi-<br>ness. | Sea-level<br>pressures. |          |   |       |
|                |                        |           |                   |          |  |                       |                          |        |                          | Maximum.                | Minimum. |   |       |
| 1.....         | 30.02                  | 70        | 62                | 76       | 67   | 61.7                  | 63                       | nne.   | 4                        | 8-4                     | 30.09    | 30.01                                     | 0.02  |
| 2.....         | 30.01                  | 72        | 64                | 77       | 65   | 56.3                  | 56                       | n-ne.  | 2-4                      | 5                       | 30.06    | 29.96                                     | 0.00  |
| 3.....         | 30.01                  | 72        | 64.5              | 78       | 71   | 59.7                  | 61                       | nne.   | 3-4                      | 3                       | 30.08    | 29.98                                     | 0.00  |
| 4.....         | 30.03                  | 73        | 65.5              | 78       | 71   | 62.5                  | 65                       | ne.    | 5-3                      | 3                       | 30.08    | 29.98                                     | 0.00  |
| 5.....         | 30.01                  | 64        | 61.5              | 79       | 72   | 62.3                  | 64                       | ne.    | 3                        | 2                       | 30.06    | 29.97                                     | 0.00  |
| 6.....         | 29.97                  | 64        | 62                | 80       | 64   | 61.0                  | 70                       | nne.   | 1-4-0                    | 2-0                     | 30.04    | 29.93                                     | 0.00  |
| 7.....         | 29.96                  | 70        | 67                | 81       | 63   | 64.0                  | 78                       | nne.   | 1-0                      | 1-0                     | 30.02    | 29.92                                     | 0.01  |
| 8.....         | 29.98                  | 67        | 65                | 82       | 68   | 65.7                  | 73                       | nne.   | 1                        | 8-1                     | 30.03    | 29.94                                     | 0.00  |
| 9.....         | 30.02                  | 71        | 69                | 82       | 67   | 65.0                  | 75                       | ne.    | 2                        | 5                       | 30.06    | 29.97                                     | 0.08  |
| 10.....        | 30.01                  | 71        | 65                | 79       | 70   | 66.0                  | 77                       | ne.    | 3-0                      | 5                       | 30.06    | 29.96                                     | 0.00  |
| 11.....        | 29.97                  | 73        | 64.5              | 80       | 70   | 61.5                  | 62                       | nne.   | 3                        | 2                       | 30.04    | 29.93                                     | 0.00  |
| 12.....        | 29.92                  | 71        | 67                | 80       | 73   | 61.0                  | 60                       | nne.   | 2                        | 2                       | 30.02    | 29.93                                     | 0.05  |
| 13.....        | 29.93                  | 73        | 66                | 80       | 70   | 63.7                  | 71                       | ne.    | 1-4                      | 5-2                     | 30.00    | 29.88                                     | 0.01  |
| 14.....        | 29.98                  | 74        | 66.5              | 80       | 72   | 62.7                  | 63                       | ene.   | 3                        | 2                       | 30.00    | 29.91                                     | 0.01  |
| 15.....        | 30.00                  | 73        | 65                | 80       | 73   | 63.0                  | 64                       | ne.    | 4                        | 4-8                     | 30.04    | 29.95                                     | 0.01  |
| 16.....        | 30.02                  | 73        | 67                | 79       | 73   | 61.5                  | 65                       | nne.   | 4                        | 5-8                     | 30.09    | 29.97                                     | 0.01  |
| 17.....        | 30.00                  | 74        | 66                | 79       | 72   | 64.5                  | 68                       | ene.   | 4                        | 7                       | 30.08    | 30.00                                     | 0.00  |
| 18.....        | 30.03                  | 74        | 64.5              | 80       | 73   | 61.0                  | 61                       | nne.   | 2-5                      | 8-2                     | 30.09    | 30.02                                     | 0.00  |
| 19.....        | 30.04                  | 72        | 63.5              | 81       | 73   | 62.7                  | 64                       | nne.   | 3                        | 3                       | 30.09    | 29.99                                     | 0.00  |
| 20.....        | 30.04                  | 72        | 65.5              | 80       | 72   | 60.3                  | 59                       | ene.   | 3                        | 2                       | 30.10    | 30.00                                     | 0.00  |
| 21.....        | 30.02                  | 73        | 65                | 79       | 71   | 61.7                  | 66                       | ene.   | 3                        | 6                       | 30.10    | 30.01                                     | 0.00  |
| 22.....        | 30.02                  | 72        | 64                | 79       | 73   | 59.3                  | 59                       | ne.    | 3-0                      | 4                       | 30.06    | 29.97                                     | 0.00  |
| 23.....        | 29.98                  | 61        | 62                | 81       | 70   | 60.7                  | 62                       | nne.   | 3-0                      | 3                       | 30.05    | 29.95                                     | 0.00  |
| 24.....        | 29.95                  | 65        | 62.5              | 81       | 64   | 61.7                  | 72                       | s-n.   | 1-0                      | 4                       | 30.03    | 29.90                                     | 0.00  |
| 25.....        | 29.91                  | 64        | 68                | 79       | 63   | 63.5                  | 77                       | sw-nw. | 1-0                      | 4                       | 29.99    | 29.90                                     | 0.00  |
| 26.....        | 29.94                  | 63        | 63                | 79       | 63   | 63.7                  | 79                       | sw-w.  | 1                        | 1-4                     | 29.97    | 29.88                                     | 0.00  |
| 27.....        | 30.00                  | 69        | 67                | 80       | 64   | 65.5                  | 81                       | sw-n.  | 1                        | 3                       | 30.02    | 29.92                                     | 0.06  |
| 28.....        | 30.10                  | 71        | 65                | 79       | 67   | 64.3                  | 75                       | n-nne. | 2-5                      | 9-3                     | 30.11    | 30.03                                     | 0.21  |
| 29.....        | 30.07                  | 71        | 66.5              | 74       | 67   | 63.7                  | 73                       | nne.   | 4                        | 8                       | 30.16    | 30.08                                     | 0.20  |
| 30.....        | 30.01                  | 71        | 65                | 78       | 71   | 64.5                  | 73                       | ne.    | 3                        | 4-2                     | 30.10    | 29.99                                     | 0.00  |
| Sums.....      |                        |           |                   |          |  |                       |                          |        |                          |                         |          |   | 0.67  |
| Means.....     | 30.00                  | 70.3      | 64.8              | 79.3     | 69.1   | 62.5                  | 69.1                     |        | 2.9                      | 3.9                     | 30.010   | 29.963                                    | ....  |
| Departure..... | + .05                  |           |                   |          |  | -3.5                  | -7.6                     |        |                          | -0.7                    | + .050   | + .050                                    | -4.85 |

Mean temperature for November, 1899 (6+3+9) ÷ 3 = 73.5°; normal is 73.8°. Mean pressure for November (9+3) ÷ 2 is 30.007; normal is 29.957.

\* This pressure is as recorded at 1 p. m., Greenwich time. † These temperatures are observed at 6 a. m., local, or 7:29 p. m., Greenwich time. ‡ These values are the means of (6+9+2+9) ÷ 4. § Beaufort scale.

### RECENT PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

- Scientific American*. New York. Vol. 81.  
— The Lecornu Cellular Kite. P. 360.  
— Relation of Rainfall to Boiler Scale. P. 386.  
*Archives des Sciences Physiques et Naturelles*. Genève. 4 Période. Tome 8.  
Rabot, C. Les variations de longueur des glaciers dans les régions arctiques et boréales (suite). P. 453.  
*Journal de Physique*. Paris. 3me série. Tome 8.  
Chauveau, A. B. Sur les variations diurnes de l'électricité atmosphérique. P. 599.  
*Nature*. London. Vol. 61.  
Wood, R. W. Cause of Dark Lightning and the Clayden Effect. P. 104.  
Bryan, G. H. Resistance of the Air. P. 107.  
Schurr, H. S. Barisal Guns. P. 127.  
*Memorias y Revista, Sociedad Científica "Antonio Alzate"*. Mexico. Tome 12.  
Leal, M. El Clima de Leon. P. 435.  
*American Journal of Science*. New Haven. Vol. 8.  
Bigelow, F. H. Some of the Results of the International Cloud Work for the United States. P. 433.  
*Gaea*. Leipzig. 36 Jahrg.  
— Hildebrandssons Untersuchungen über die Regenverteilung in ihrer Beziehung zu den Aktionscentren der Atmosphäre. P. 28.  
— Der Harmattan. P. 34.  
*Philosophical Magazine*. London. Vol. 48.  
Callendar, H. L. On a Practical Thermometric Standard. P. 519.  
*L'Aerophile*. Paris. 7me année.  
Hermite, G. Ascension du ballon sonde *Aerophile* No. 4. P. 125.  
*La Nature*. Paris. 28me Année.  
Mocquery, C. Échelle thermométrique naturelle. P. 3.  
Leroy, J. Un cyclone dans la forêt de Villers-Cotterets. P. 12.  
*Meteorologische Zeitschrift*. Wien. Vol. 16.  
Gockel, Albert. Messungen des Potential-gefälles der Luft-elektricität in Biscra. P. 481.  
Jensen, Chr. Beiträge zur Photometrie des Himmels. (Schluss.) P. 488.  
Hann, J. Ueber die Abhängigkeit der Amplitude der halbtägigen Barometer-Oscillation von der Geographischen Breite. P. 499.  
Reimann, —. Abnorm dunkle Nächte. P. 504.  
Hann, J. Klima von Cuba. P. 505.  
Sapper, Karl. Resultate der meteorologischen Beobachtungen in der Republik Guatemala im Jahre 1898. P. 508.  
Knipping, E. Zum Klima von Nauru. P. 511.  
— Hagelfall und Trombe in Bizerte. P. 521.  
Wiesner, J. Beiträge zur Kenntniss des photochemischen Klimas im arktischen Gebiete. (Review.) P. 525.  
*Journal of School Geography*. Lancaster. Vol. 3.  
Ward, R. DeC. Climate of the Philippine Islands. P. 361.  
*Naturwissenschaftliche Rundschau*. Braunschweig. 14 Jahr.  
Exner, Franz. Beiträge zur Kenntniss der atmosphärischen Elektrizität. P. 609.



*Annuaire de la Société Météorologique de France. 47 Année.*

Raulin, M. V. Résumé des Observations atmidométriques (éva-  
poration) faites dans la Péninsule Obérique de 1857 à 1890. P. 20.

Cocurdevache, P. Oscillation diurne de la vitesse du vent sui-  
vant la décroissance de température dans la verticale. P. 41.

Cocurdevache, P. Variation diurne de l'électricité atmosphé-  
rique suivant la décroissance de température dans la verticale.  
P. 43.

Cocurdevache, P. Variation diurne des éléments météorolo-  
giques suivant la décroissance de température dans la verticale en  
janvier. P. 46.

*Zeitschrift für Luftschiffahrt und Physik der Atmosphäre. Berlin. 18 Jahrg.*

Tuma, J. Beiträge zur Kenntniss der atmosphärischen Elektrici-  
tät. Luftelektricitätsmessungen im Luftballon. P. 257.

*Das Wetter. Berlin. 16 Jahrgang.*

Bebber, W. J. van. Wissenschaftliche Grundlage seiner Wetter-  
vorhersage auf mehrere Tage voraus, insbesondere im Interesse  
der Landwirtschaft. P. 241.

Meinardus, W. Ueber die Nothwendigkeit hydrographischer  
Studien im nordatlantischen Ocean zum verstandnis der meteoro-  
logischen Erscheinungen im nordalpinen Europa (schluss). P.  
246.

Davis, W. M. Die Cirkulation der Atmosphäre (schluss). P. 253.

### OBSERVATIONS AT RIVAS, NICARAGUA.

The records contributed for many years by Dr. Earl Flint, at Rivas, Nicaragua, include barometric readings. His present station is at 11° 26' N., 85° 47' W. The observations at 7:17 a. m., local time, are simultaneous with Greenwich 1 p. m. The altitude of the barometer is now said to be 4 feet above ground; the thermometer 6 feet above ground; the rain gage 7 feet above ground. The ground is 210 feet above sea level. Until the barometer has been compared with a standard it seems hardly necessary to publish the daily readings. The wind force is recorded on the Beaufort scale, 0-12. When cloudiness is less than  $\frac{1}{10}$ , the letter "F," or "Few," is recorded.

Simultaneous observations at 1 p. m. Greenwich (or 7:17 a. m. local) time, November, 1899.

| Date.      | Tempera-<br>ture. |            | Wind.      |        | Upper clouds. |         |                 | Lower Clouds. |         |                 |
|------------|-------------------|------------|------------|--------|---------------|---------|-----------------|---------------|---------|-----------------|
|            | Air.              | Dew-point. | Direction. | Force. | Kind.         | Amount. | Direction from. | Kind.         | Amount. | Direction from. |
| 1.....     | 77                | 74         | e.         | 2      |               |         |                 | k.            | 3       | e.              |
| 2.....     | 78.5              | 74         | ne.        | 4      |               |         |                 | ks.           | 3       | ne.             |
| 3.....     | 78                | 74         | ne.        | 0      | 0             | 0       | 0               | 0             | 0       | 0               |
| 4.....     | 77.5              | 74         | e.         | 2      |               |         |                 | ak.           | 8       | se.             |
| 5.....     | 77.5              | 74         | ne.        | 0      |               |         |                 | ks.           | 10      | ne.             |
| 6.....     | 76.5              | 73         | n.         | 0      |               |         |                 | ak.           | 8       | n.              |
| 7.....     | 75.5              | 73         | ne.        | 0      |               |         |                 | k.            | 10      | n.              |
| 8.....     | 76.5              | 74         | w.         | 0      |               |         |                 | k.            | 10      | w.              |
| 9.....     | 77.5              | 75         | ne.        | 3      |               |         |                 | ak,k.         | 9.1     | ne.             |
| 10.....    | 78                | 74         | ne.        | 1      | ck.           | 2       | sw.             | ks.           | 1       | ne.             |
| 11.....    | 77                | 74         | ne.        | 3      |               |         |                 | ak.           | 9       | ne.             |
| 12.....    | 79                | 75         | ne.        | 3      |               |         |                 | ak,ks.        | 8       | ne.             |
| 13.....    | 79                | 73         | ne.        | 5      |               |         |                 | ak,ks.        | 1       | ne.             |
| 14.....    | 78.5              | 76         | ne.        | 2      |               |         |                 | k.            | 10      | ne.             |
| 15.....    | 77                | 74         | ne.        | 3      |               |         |                 | ks.           | 10      | ne.             |
| 16.....    | 76.5              | 71         | ne.        | 3      |               |         |                 | ak,ks.        | 9       | ne.             |
| 17.....    | 79                | 73         | ne.        | 4      |               |         |                 | ak.           | 6       | ne.             |
| 18.....    | 80                | 72         | ne.        | 5      |               |         |                 | ak.           | few.    | ne.             |
| 19.....    | 79                | 75         | ne.        | 3      | ck.           | 5       | sw.             | n.            | 1       | se.             |
| 20.....    | 78.5              | 75         | ne.        | 2      |               |         |                 | k.            | 9       | ne.             |
| 21.....    | 77                | 76         | sw.        | 1      |               |         |                 | kn.           | 10      | sw.             |
| 22.....    | 78                | 77         | sw.        | 0      |               |         |                 | ak,k.         | 2.5     | sw,ne.          |
| 23.....    | 80                | 76         | sw.        | 0      | cs.           | 2       | se.             | ak,k.         | 3.3     | se,sw.          |
| 24.....    | 78                | 74         | nw.        | 0      | cs,ck.        | 10      | nw.             |               |         |                 |
| 25.....    | 78                | 74         | sw.        | 0      | cs.           | 9       | sw.             |               |         |                 |
| 26.....    | 76                | 73         | ne.        | 0      | cs.           | 2       | ne.             | ks.           | 3       | ne.             |
| 27.....    | 76.5              | 73         | ne.        | 1      |               |         |                 | k.            | 10      | ne.             |
| 28.....    | 75                | 74         | sw.        | 1      |               |         |                 | n.            | 10      | sw.             |
| 29.....    | 75                | 74         | sw.        | 0      |               |         |                 | n.            | 10      | sw.             |
| 30.....    | 73                | 71         | sw.        | 0      |               |         |                 | n.            | 10      | sw.             |
| Means..... | 77.4              |            |            |        |               |         |                 |               |         |                 |
| Departure  | +0.5              |            |            |        |               |         |                 |               |         |                 |

This station is situated on the western shore of Lake Nicaragua, not far from the eastern end of the western division of

the proposed Nicaragua Canal. The volcano Ometepe, on an island in Lake Nicaragua, is about 10 miles northeast of the station. Dr. Flint's records occasionally mention the presence of clouds on the summit of this mountain.

Dr. Flint's reports to the Weather Bureau now embrace two distinct features, namely, the simultaneous morning observations and the daily climatological summary, as given in the two accompanying tables for each month.

Climatological observations for twenty-four hours ending at 7:17 a. m. local (or 1 p. m. Greenwich) time, November, 1899.

| Date.          | Temperature. |          | Wind.                 |                | Average cloudi-<br>ness. | Total rainfall. | Rainfall at Sapoa. | Sardinas.       |       |
|----------------|--------------|----------|-----------------------|----------------|--------------------------|-----------------|--------------------|-----------------|-------|
|                | Maximum.     | Minimum. | Prevailing direction. | Maximum force. |                          |                 |                    | Total rainfall. | Wind. |
|                |              |          |                       |                |                          | Inches.         | Ins.               |                 |       |
| 1.....         | 81           | 76       | ne.                   | 3              | 8                        | 0.53            | 0.00               | 0.00            | e.    |
| 2.....         | 83           | 76       | ene.                  | 3              | 1                        | 0.00            | 0.21               | 0.00            | e.    |
| 3.....         | 85           | 77       | ne.                   | 4              | 5                        | 0.00            | 0.04               | 0.01            | e.    |
| 4.....         | 86           | 76.5     | ne.                   | 3              | 2                        | 0.32            | 0.35               | 1.85            | e.    |
| 5.....         | 83           | 76.5     | e.                    | 3              | 9                        | T.              | 0.24               | 0.14            | se.   |
| 6.....         | 83           | 76       | ne.                   | 5              | 9                        | T.              | 0.15               | 0.22            | e.    |
| 7.....         | 84           | 75       | sw.                   | 2              | 5                        | 0.00            | 0.33               | 0.17            | s.    |
| 8.....         | 88           | 74       | ne.                   | 2              | 6                        | 0.80            | 0.03               | 0.11            | s.    |
| 9.....         | 85           | 75       | ne.                   | 2              | 8                        | 1.07            | 1.63               | 0.52            | ne.   |
| 10.....        | 83           | 76       | ne.                   | 4              | 6                        | 0.10            | 0.16               | 0.47            | e.    |
| 11.....        | 84           | 76       | ne.                   | 3              | 4                        | 0.00            | 0.13               | 0.04            | e.    |
| 12.....        | 84           | 77       | ne.                   | 4              | 9                        | 0.00            | 0.00               | 0.00            | ne.   |
| 13.....        | 86           | 78       | ne.                   | 6              | 5                        | 0.00            | 0.02               | 0.11            | ne.   |
| 14.....        | 86           | 78.5     | ne.                   | 6              | 6                        | 0.31            | 0.11               | 0.14            | ne.   |
| 15.....        | 86           | 78       | ne.                   | 4              | 8                        | 0.04            | 0.23               | 0.00            | e.    |
| 16.....        | 79.5         | 76       | ne.                   | 5              | 10                       | 0.00            | 0.00               | 0.04            | e.    |
| 17.....        | 84           | 76       | ne.                   | 5              | 6                        | 0.00            | 0.00               | 0.04            | e.    |
| 18.....        | 86           | 77       | ne.                   | 4              | 3                        | 0.00            | 0.09               | 0.65            | e.    |
| 19.....        | 87           | 77.5     | ne.                   | 5              | 3                        | T.              | 0.96               | 0.44            | e.    |
| 20.....        | 86.5         | 78       | ne.                   | 4              | 4                        | 0.00            | 0.08               | 0.17            | e.    |
| 21.....        | 85.5         | 77.5     | ne.                   | 3              | 7                        | 0.26            | 0.40               | 0.00            | se.   |
| 22.....        | 84.5         | 76.5     | se-sw.                | 2              | 6                        | 0.10            | 0.11               | 0.18            | 0     |
| 23.....        | 87           | 77       | e.                    | 2              | 5                        | 0.36            | 0.01               | 0.00            | s.    |
| 24.....        | 86           | 77       | e.                    | 1              | 8                        | 0.00            | 0.19               | 0.33            | s.    |
| 25.....        | 85           | 75       | sw.                   | 1              | 10                       | 0.38            | 0.09               | 0.01            | 0     |
| 26.....        | 86           | 77       | sw.                   | 1              | 6                        | 0.00            | 0.00               | 0.00            | 0     |
| 27.....        | 85           | 74       | ne.                   | 2              | 7                        | 0.44            | 0.52               | 2.44            | ne.   |
| 28.....        | 80           | 76       | ne.                   | 3              | 10                       | 0.53            | 0.70               | 0.12            | s.    |
| 29.....        | 78.2         | 74       | sw.                   | 3              | 7                        | 3.15            | 0.62               | 0.21            | s.    |
| 30.....        | 78           | 75       | sw.                   | 1              | 10                       | 1.70            | 1.19               | 3.18            | se.   |
| Sums.....      |              |          |                       |                |                          | 9.50            | 8.50               | 11.50           |       |
| Means.....     | 84.0         | 76.3     |                       |                | 6.4                      |                 |                    |                 |       |
| Departure..... |              |          |                       |                |                          | +5.12           |                    |                 |       |

In this report Mr. Flint gives the rainfall at Sapoa and Sardinas, Nicaragua. Sapoa, like Rivas, is on the southwest shore of Lake Nicaragua, and about 15 miles southeast of Rivas. Sardinas is 25 miles east of Sapoa, on the lake shore.

6th, 7th, 8th, cold wave, southwesterly breezes. 8th, thunderstorm 9 p. m. to 3 a. m. of the 9th, followed by rain. On morning of 8th severe rain at San Bartol, 5 miles northwest, the wind from west. The storm of 9th was severe at Belen, lasting all night, but 6 miles northwest, it rained till 10 a. m. of 10th. November aerolites watched for; disappointed; five seen by others a. m. of 13th and 14th. Francisco Salazon, of Nandaime saw a large one on the 14th; could not tell color. First saw a dim light over a cloud, and said light of meteor obscured the moon. On the night of the 23d, two passed north and south, five minutes apart; small, shooting in a direct line; height, 12°; no trail. On the 6th General Fonseca reports one at Escalanti; no explosion; course east to west. Many severe rains reported this month in places near here. 26th, heavy rain at Potosi. Here our first excessive rain on the 28th, from 1 to 1.45 p. m., mostly in first twenty minutes; wind southwest, light. 7:17 a. m. of 29th, 3.15 inches fell in nineteen hours and thirty-two minutes. Barometer commenced rising on the 29th. On the 30th, barometer read 29.78, .20 below normal; misting to 11 a. m.; wind veered to northeast 1 p. m.; alto cumulus from southwest; cumulus east. Never observed here anything like the thunderstorms of this month. Rainfall also exceeded any for nineteen years.

29th, thunderstorm at Managua.

## THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Chief of Division of Meteorological Records.

The month was generally free from severe storms and destructive cold waves. The temperature was abnormally high over substantially the whole country, and the rainfall was generally deficient, except on the Pacific coast from San Francisco northward and over Oklahoma and northern Texas.

The heavy rains in California, which State it may be remembered has but recently passed through several very dry years, will undoubtedly do much toward replenishing the diminished water supply.

Much thick weather with fog and rain prevailed on the Pacific coast north of central California.

In the Lake region the weather was especially fine and navigation was uninterrupted, except on lower Lake Michigan and then for a little more than twenty-four hours only.

## PRESSURE.

The distribution of monthly mean pressure follows closely that of a normal winter month. Except in the Lake region and the upper Mississippi Valley, pressure was generally below normal, the greatest deficit being on the north Pacific coast. As compared with the preceding month mean pressure was markedly lower from the Ohio Valley and the Lake region to the Maritime Provinces of Canada and over the northern slope and the north Pacific coast. Between these two regions there was an increase of pressure amounting in the Rocky Mountain region to a tenth of an inch and over.

## TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

Temperature was higher than usual over substantially the whole of the United States, the only region showing a deficit being a portion of northern New England. The excess ranged from about 2° on the Atlantic, Gulf, and Pacific coasts to 16° in Manitoba.

The line of freezing temperature extended from the Maryland coast southwesterly to the Rio Grande River in the neighborhood of Eagle Pass. The lowest temperatures of the month were recorded in western Kansas, western Nebraska, and western South Dakota. Abnormally high or low temperatures were not observed in any district.

## Average temperatures and departures from the normal.

| Districts.                      | Number of stations. | Average temperatures for the current month. | Departures for the current month. | Accumulated departures since January 1. | Average departures since January 1. |
|---------------------------------|---------------------|---|-----------------------------------|---|-------------------------------------|
| New England .....               | 10                  | 41.1  | 0.0                               | + 2.2                                   | + 0.2                               |
| Middle Atlantic .....           | 12                  | 46.3  | + 1.6                             | + 2.3                                   | + 0.2                               |
| South Atlantic .....            | 10                  | 57.1  | + 2.2                             | + 4.2                                   | + 0.4                               |
| Florida Peninsula .....         | 7                   | 67.7  | + 1.0                             | + 4.5                                   | + 0.4                               |
| East Gulf .....                 | 7                   | 60.3  | + 3.0                             | + 1.3                                   | + 0.1                               |
| West Gulf .....                 | 7                   | 59.7  | + 3.2                             | + 4.8                                   | + 0.4                               |
| Ohio Valley and Tennessee ..... | 12                  | 49.5  | + 4.5                             | + 8.8                                   | + 0.8                               |
| Lower Lake .....                | 9                   | 42.6  | + 3.5                             | + 9.9                                   | + 0.9                               |
| Upper Lake .....                | 9                   | 41.4  | + 8.0                             | + 7.0                                   | + 0.6                               |
| North Dakota .....              | 7                   | 36.6  | + 12.7                            | + 5.9                                   | + 0.5                               |
| Upper Mississippi .....         | 11                  | 46.5  | + 9.1                             | + 8.1                                   | + 0.7                               |
| Missouri Valley .....           | 10                  | 46.5  | + 9.4                             | + 5.4                                   | + 0.5                               |
| Northern Slope .....            | 7                   | 40.9  | + 8.5                             | + 16.5                                  | + 1.5                               |
| Middle Slope .....              | 6                   | 48.3  | + 6.8                             | + 3.6                                   | + 0.3                               |
| Southern Slope .....            | 6                   | 53.6  | + 4.7                             | 0.0                                     | 0.0                                 |
| Southern Plateau .....          | 13                  | 49.9  | + 2.5                             | + 4.0                                   | + 0.4                               |
| Middle Plateau .....            | 9                   | 42.6  | + 4.5                             | + 9.8                                   | + 0.9                               |
| Northern Plateau .....          | 10                  | 43.4  | + 6.6                             | + 10.3                                  | + 0.9                               |
| North Pacific .....             | 9                   | 51.2  | + 5.8                             | + 6.6                                   | + 0.6                               |
| Middle Pacific .....            | 5                   | 55.5  | + 1.9                             | + 3.0                                   | + 0.3                               |
| South Pacific .....             | 4                   | 58.7  | + 1.1                             | + 4.4                                   | + 0.4                               |

## In Canada.—Prof. R. F. Stupart says:

The temperature was from average to 1° below in the Maritime Provinces, but elsewhere throughout Canada it was above average, and in nearly all localities to a large amount. This was strikingly the case in the Territories and in Manitoba, where the average was exceeded by from 15° to 20°. British Columbia and Ontario were also considerably in excess of the average.

## PRECIPITATION.

As a whole the month was dry, especially on the Atlantic coast, in the Lake region, Ohio, West Virginia, eastern Tennessee, North Carolina, southern Georgia, and Florida. The districts wherein an excess of precipitation occurred were the middle and southern slopes, embracing Oklahoma, Indian Territory, and New Mexico, and part of Texas. Heavy rains also fell on the Pacific coast, from 20 to 30 inches being recorded at a number of places. In southern California barely the normal quantity of rain fell.

## SNOWFALL.

The depth of snowfall during the month is graphically shown on Chart VIII, and the numerical values are given in Table II.

The snowfall of the month was generally light. A small area in central Illinois and northern Indiana received more than 10 inches, and falls of 10 inches and upward also occurred in the mountain regions of Colorado.

## Average precipitation and departures from the normal.

| Districts.                      | Number of stations. | Average.       |                       | Departure.     |                           |
|---------------------------------|---------------------|----------------|-----------------------|----------------|---------------------------|
|                                 |                     | Current month. | Percentage of normal. | Current month. | Accumulated since Jan. 1. |
|                                 |                     | Inches.        |                       | Inches.        | Inches.                   |
| New England .....               | 10                  | 2.11           | 52                    | -1.9           | - 5.5                     |
| Middle Atlantic .....           | 12                  | 1.60           | 50                    | -1.6           | - 3.9                     |
| South Atlantic .....            | 10                  | 1.86           | 61                    | -1.2           | - 3.8                     |
| Florida Peninsula .....         | 7                   | 0.52           | 21                    | -2.0           | - 2.0                     |
| East Gulf .....                 | 7                   | 2.59           | 70                    | -1.1           | -11.7                     |
| West Gulf .....                 | 7                   | 2.63           | 67                    | -1.3           | - 9.2                     |
| Ohio Valley and Tennessee ..... | 12                  | 2.11           | 58                    | -1.5           | - 6.1                     |
| Lower Lake .....                | 8                   | 1.56           | 49                    | -1.6           | - 7.6                     |
| Upper Lake .....                | 9                   | 0.92           | 37                    | -1.6           | - 4.4                     |
| North Dakota .....              | 7                   | 0.37           | 55                    | -0.3           | - 2.3                     |
| Upper Mississippi Valley .....  | 11                  | 1.40           | 64                    | -0.8           | - 0.7                     |
| Missouri Valley .....           | 10                  | 0.59           | 64                    | -0.5           | - 5.6                     |
| Northern Slope .....            | 7                   | 0.42           | 81                    | -0.1           | - 0.4                     |
| Middle Slope .....              | 6                   | 1.88           | 214                   | +1.0           | + 3.9                     |
| Southern Slope .....            | 6                   | 4.87           | 383                   | +3.6           | + 6.8                     |
| Southern Plateau .....          | 13                  | 0.61           | 100                   | 0.0            | - 2.5                     |
| Middle Plateau .....            | 9                   | 0.81           | 89                    | -0.1           | + 1.8                     |
| Northern Plateau .....          | 10                  | 2.10           | 131                   | +0.5           | + 0.6                     |
| North Pacific .....             | 9                   | 13.52          | 185                   | +6.2           | +11.1                     |
| Middle Pacific .....            | 5                   | 6.32           | 209                   | +3.3           | + 3.6                     |
| South Pacific .....             | 4                   | 1.30           | 100                   | 0.0            | - 0.5                     |

## In Canada.—Professor Stupart says:

The rainfall over Vancouver Island and the lower mainland of British Columbia was excessive, and in that part of the Dominion it has been probably one of the wettest Novembers on record. Elsewhere throughout Canada precipitation was below average, except in small sections of the Northwest Territories and Manitoba, where it was very slightly above. The greatest amount below average was over the lower Lake region and the Georgian Bay district, Parry Sound reporting 3.0 inches below; Southampton, 2.7 inches below; Toronto, 2.0 inches below; and Kingston, 2.1 inches below. In the Province of Quebec the amount below average was about 1.5 inches, but in the Maritime Provinces the amount below average was generally quite small. A heavy fall of snow occurred over the Georgian Bay district on the 4th, and another one in the Maritime Provinces on the 12th, but the snow soon melted, and at the end of the month there was practically no snow on the ground in any portion of the Dominion.

## HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 14. Arizona, 18. Arkansas, 18, 21, 26. Georgia,



13. Idaho, 10. Indiana, 22. Iowa, 6. Kansas, 21. Kentucky, 14. Maryland, 3. Missouri, 7, 8, 14, 17, 20, 21, 22. Nebraska, 30. New Mexico, 18. New York, 5, 12. Ohio, 16. Oklahoma, 17. Oregon, 10, 29. Pennsylvania, 3. Tennessee, 14. Texas, 18. Utah, 16. Washington, 21. Wisconsin, 10.

## SLEET.

The following are the dates on which sleet fell in the respective States:

Arkansas, 2. Colorado, 10, 15, 19. Connecticut, 11. Idaho, 12, 29. Indiana, 2, 3, 29. Iowa, 11, 30. Maine, 4, 15, 22. Maryland, 3, 13, 14, 28. Massachusetts, 4, 11, 12, 15, 22. Michigan, 3, 13, 29, 30. Minnesota, 9, 10, 30. Mississippi, 3. Montana, 19, 27. Nebraska, 30. New Hampshire, 10, 11, 15, 21, 22. New Jersey, 14, 15. New Mexico, 15, 20. New York, 11, 14, 15, 21. North Dakota, 10, 12. Ohio, 2, 3, 4, 10, 23, 28. Oklahoma, 25. Pennsylvania, 3, 4, 11, 14, 15. Tennessee, 1, 2, 3, 7, 13. Texas, 1. Utah, 15, 17, 22, 30. Vermont, 11, 22. Washington, 16, 30. Wisconsin, 2, 10, 12, 22. Wyoming, 15, 19.

## HUMIDITY.

Average relative humidity and departures from the normal.

| Districts.                      | Average. | Departure from the normal. | Districts.                 | Average. | Departure from the normal. |
|---------------------------------|----------|----------------------------|----------------------------|----------|----------------------------|
| New England .....               | 76       | -12                        | Missouri Valley .....      | 73       | +                          |
| Middle Atlantic .....           | 77       | +1                         | Northern Slope .....       | 68       | +4                         |
| South Atlantic .....            | 80       | +1                         | Middle Slope .....         | 66       | +13                        |
| Florida Peninsula .....         | 78       | -3                         | Southern Slope .....       | 74       | -13                        |
| East Gulf .....                 | 72       | -5                         | Southern Plateau .....     | 44       | -12                        |
| West Gulf .....                 | 75       | +2                         | Middle Plateau .....       | 56       | +2                         |
| Ohio Valley and Tennessee ..... | 76       | +2                         | Northern Plateau .....     | 75       | +2                         |
| Lower Lake .....                | 78       | +2                         | North Pacific Coast .....  | 87       | 0                          |
| Upper Lake .....                | 83       | +3                         | Middle Pacific Coast ..... | 85       | +12                        |
| North Dakota .....              | 79       | 0                          | South Pacific Coast .....  | 78       | +11                        |
| Upper Mississippi .....         | 77       | +3                         |                            |          |                            |

## WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

| Stations.              | Date. | Velocity. | Direction. | Stations.                  | Date. | Velocity. | Direction. |
|------------------------|-------|-----------|------------|----------------------------|-------|-----------|------------|
| Carson City, Nev. .... | 29    | 60        | sw.        | Fort Canby, Wash. ....     | 29    | 56        | se.        |
| Denver, Colo. ....     | 29    | 51        | nw.        | Do. ....                   | 30    | 70        | se.        |
| Fort Canby, Wash. .... | 10    | 62        | se.        | Havre, Mont. ....          | 29    | 52        | sw.        |
| Do. ....               | 13    | 54        | se.        | Mount Tamalpais, Cal. .... | 21    | 53        | w.         |
| Do. ....               | 17    | 56        | se.        | Do. ....                   | 29    | 56        | w.         |
| Do. ....               | 18    | 72        | se.        | New York, N. Y. ....       | 12    | 56        | nw.        |
| Do. ....               | 20    | 60        | se.        | Winnemucca, Nev. ....      | 29    | 75        | w.         |
| Do. ....               | 27    | 57        | se.        |                            |       |           |            |

## SUNSHINE AND CLOUDINESS.

The month was unusually free from clouds, except over the

Lake region, northern New England and the States of Idaho, Oregon, Washington, and northern California.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

Average cloudiness and departures from the normal.

| Districts.                      | Average. | Departure from the normal. | Districts.                 | Average. | Departure from the normal. |
|---------------------------------|----------|----------------------------|----------------------------|----------|----------------------------|
| New England .....               | 5.9      | +0.3                       | Missouri Valley .....      | 5.4      | +0.5                       |
| Middle Atlantic .....           | 4.8      | -0.4                       | Northern Slope .....       | 4.4      | -0.2                       |
| South Atlantic .....            | 3.9      | -0.6                       | Middle Slope .....         | 4.6      | +1.0                       |
| Florida Peninsula .....         | 4.7      | +0.1                       | Southern Slope .....       | 4.2      | +1.0                       |
| East Gulf .....                 | 4.6      | +0.1                       | Southern Plateau .....     | 2.6      | -0.3                       |
| West Gulf .....                 | 4.6      | 0.0                        | Middle Plateau .....       | 4.9      | +1.3                       |
| Ohio Valley and Tennessee ..... | 6.0      | +0.3                       | Northern Plateau .....     | 7.0      | +1.0                       |
| Lower Lake .....                | 7.6      | +0.4                       | North Pacific Coast .....  | 8.7      | +1.9                       |
| Upper Lake .....                | 6.9      | -0.1                       | Middle Pacific Coast ..... | 7.0      | +3.0                       |
| North Dakota .....              | 4.0      | -1.3                       | South Pacific Coast .....  | 5.3      | +2.4                       |
| Upper Mississippi .....         | 5.8      | +0.5                       |                            |          |                            |

## ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

**Thunderstorms.**—Reports of 661 thunderstorms were received during the current month as against 619 in 1898 and 732 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 14th, 111; 13th, 93; 21st, 61; 17th, 56.

Reports were most numerous from: Missouri, 123; Illinois, 86; Arkansas, 46; Kansas, 40.

**Auroras.**—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 12th to 20th.

The greatest number of reports were received for the following dates: 16th, 4; 2d, 25th, 29th, 2.

Reports were most numerous from: Ohio, 5; Montana and North Dakota, 3.

**In Canada.**—Auroras were reported as follows: Father Point, 3d, 6th, 23d, 29th, 30th; Minnedosa, 4th, 6th, 30th; Swift Current, 13th, 25th, 29th; Prince Albert, 4th, 25th, 27th; Battleford, 4th.

Thunderstorms were reported as follows: Yarmouth, 12th; Bermuda, 5th.

## WEATHER IN THE WEST INDIES.

The distribution of pressure, temperature, and the direction of the resultant winds in the West Indies are shown on Chart IX. The numerical values of pressure, temperature, etc., for West Indian stations will be found in Tables I, II, III, IV, V, VI, VIII, IX, and X.

The climate and crop services of Cuba and Puerto Rico publish statistics of temperature and rainfall for a somewhat larger number of stations than is given at the end of Table II.

## DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Chief of Division of Meteorological Records.

For description of tables and charts see page 424 of REVIEW for September, 1899.

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TABLE I.—Climatological data for Weather Bureau Stations, November, 1899.

| Stations.           | Elevation of instruments.        |                            |                          | Pressure, in inches.                  |               |                        | Temperature of the air, in degrees Fahrenheit. |                        |          |       |               |       |                       |                       |                                    |                                   | Precipitation, in inches. |                        |                         | Wind.                  |                       |                   |                 |            | Clear days. | Partly cloudy days. | Cloudy days. | Average cloudiness, tenths. | Total snowfall. |       |      |
|---------------------|----------------------------------|----------------------------|--------------------------|---------------------------------------|---------------|------------------------|--|------------------------|----------|-------|---------------|-------|-----------------------|-----------------------|------------------------------------|-----------------------------------|---------------------------|------------------------|-------------------------|------------------------|-----------------------|-------------------|-----------------|------------|-------------|---------------------|--------------|-----------------------------|-----------------|-------|------|
|                     | Barometer above sea level, feet. | Thermometers above ground. | Anemometer above ground. | Mean actual, 8 a. m. and 8 p. m. + 2. | Mean reduced. | Departure from normal. | Mean max. and min. + 2.                        | Departure from normal. | Maximum. | Date. | Mean minimum. | Date. | Greatest daily range. | Mean wet thermometer. | Mean temperature of the dew-point. | Mean relative humidity, per cent. | Total.                    | Departure from normal. | Days with .01, or more. | Total movement, miles. | Prevailing direction. | Maximum velocity. | Miles per hour. | Direction. |             |                     |              |                             |                 | Date. |      |
| New England.        |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |            |             |                     |              |                             |                 |       |      |
| Eastport.....       | 76                               | 69                         | 74                       | 29.88                                 | 29.97         | -.00                   | 41.1   | 0.0                    | 59       | 1     | 42            | 18    | 17                    | 30                    | 27                                 | 33                                | 30                        | 78                     | 2.11                    | -1.9                   | 12                    | 8,671             | n.              | 48         | nw.         | 12                  | 6            | 7                           | 17              | 7.2   | 14.7 |
| Portland, Me.....   | 108                              | 81                         | 89                       | 29.88                                 | 29.98         | +.01                   | 37.4   | -0.6                   | 58       | 1     | 44            | 22    | 17                    | 31                    | 28                                 | 33                                | 29                        | 74                     | 3.11                    | -0.9                   | 7                     | 4,541             | nw.             | 26         | nw.         | 12                  | 8            | 3                           | 14              | 5.9   | 8.0  |
| Northfield.....     | 872                              | 15                         | 65                       | 29.08                                 | 30.05         | +.01                   | 32.5   | 0.4                    | 32       | 7     | 40            | 10    | 14                    | 26                    | 31                                 | 29                                | 26                        | 81                     | 2.38                    | -0.9                   | 10                    | 5,956             | n.              | 36         | nw.         | 2                   | 5            | 5                           | 20              | 7.7   | 8.0  |
| Boston.....         | 125                              | 115                        | 181                      | 29.88                                 | 30.02         | -.00                   | 42.0   | 1.4                    | 66       | 1     | 49            | 25    | 13                    | 35                    | 33                                 | 38                                | 33                        | 74                     | 2.51                    | -2.0                   | 7                     | 7,384             | nw.             | 34         | nw.         | 12                  | 10           | 7                           | 13              | 5.7   | 0.0  |
| Nantucket.....      | 14                               | 48                         | 54                       | 30.00                                 | 30.01         | -.05                   | 45.3   | 0.6                    | 66       | 1     | 50            | 29    | 18                    | 40                    | 27                                 | 41                                | 37                        | 77                     | 1.54                    | -2.0                   | 10                    | 8,092             | nw.             | 34         | n.          | 20                  | 6            | 12                          | 12              | 6.1   | 0.0  |
| Woods Hole.....     | 22                               | 11                         | 57                       | 29.99                                 | 30.01         | -.03                   | 44.4   | 1.1                    | 66       | 1     | 50            | 26    | 13                    | 39                    | 27                                 | 41                                | 38                        | 81                     | 1.67                    | -3.2                   | 8                     | 11,066            | nw.             | 48         | nw.         | 12                  | 12           | 6                           | 12              | 5.0   | 0.0  |
| Vineyard Haven..... | 30                               | 35                         | 35                       | 30.00                                 | 30.01         | -.03                   | 45.3   | 1.0                    | 71       | 1     | 52            | 28    | 13                    | 38                    | 26                                 | 41                                | 36                        | 71                     | 1.97                    | -1.7                   | 10                    | 6,047             | n.              | 30         | w.          | 4                   | 8            | 11                          | 11              | 6.1   | T.   |
| Block Island.....   | 27                               | 11                         | 70                       | 30.00                                 | 30.02         | -.03                   | 44.6   | 0.3                    | 65       | 1     | 50            | 28    | 13                    | 39                    | 22                                 | 41                                | 36                        | 71                     | 1.04                    | -3.2                   | 9                     | 11,671            | nw.             | 48         | e.          | 3                   | 19           | 8                           | 9               | 4.5   | 0.0  |
| Narragansett.....   | 107                              | 117                        | 140                      | 29.92                                 | 30.04         | -.02                   | 41.8   | 1.2                    | 66       | 1     | 50            | 21    | 26                    | 33                    | 24                                 | 37                                | 33                        | 76                     | 1.29                    | -2.8                   | 6                     | 8,137             | nw.             | 35         | nw.         | 12                  | 14           | 8                           | 8               | 4.5   | 1.0  |
| New Haven.....      | 107                              | 117                        | 140                      | 29.92                                 | 30.04         | -.02                   | 42.0   | 0.9                    | 62       | 1     | 50            | 25    | 13                    | 34                    | 24                                 | 37                                | 33                        | 76                     | 1.89                    | -2.0                   | 8                     | 6,137             | n.              | 35         | nw.         | 12                  | 14           | 8                           | 8               | 4.5   | 1.0  |
| Mid. Atl. States.   |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |            |             |                     |              |                             |                 |       |      |
| Albany.....         | 97                               | 84                         | 113                      | 29.96                                 | 30.07         | +.01                   | 39.6   | 0.4                    | 58       | 19    | 46            | 23    | 13                    | 33                    | 23                                 | 36                                | 33                        | 82                     | 1.47                    | -1.5                   | 7                     | 5,022             | s.              | 24         | n.          | 24                  | 10           | 10                          | 10              | 5.9   | T.   |
| Binghamton.....     | 575                              | 79                         | 90                       | 29.96                                 | 30.07         | +.01                   | 39.0   | 1.0                    | 58       | 19    | 45            | 21    | 14                    | 33                    | 27                                 | 36                                | 33                        | 82                     | 1.83                    | -0.5                   | 7                     | 4,237             | nw.             | 24         | n.          | 12                  | 2            | 10                          | 18              | 7.9   | 2.0  |
| New York.....       | 314                              | 108                        | 146                      | 29.71                                 | 30.06         | -.01                   | 45.4   | 2.0                    | 62       | 1     | 52            | 29    | 13                    | 39                    | 18                                 | 41                                | 37                        | 77                     | 2.13                    | -1.7                   | 8                     | 9,462             | nw.             | 56         | nw.         | 12                  | 13           | 8                           | 9               | 4.4   | T.   |
| Harrisburg.....     | 377                              | 94                         | 104                      | 29.95                                 | 30.08         | -.02                   | 43.8   | 1.4                    | 63       | 19    | 51            | 28    | 27                    | 37                    | 26                                 | 41                                | 36                        | 72                     | 2.13                    | -0.7                   | 8                     | 4,091             | nw.             | 26         | ne.         | 1                   | 11           | 8                           | 11              | 5.3   | 0.0  |
| Philadelphia.....   | 117                              | 168                        | 184                      | 29.95                                 | 30.08         | -.02                   | 46.3   | 2.4                    | 65       | 11    | 54            | 29    | 13                    | 39                    | 24                                 | 41                                | 36                        | 72                     | 1.93                    | -1.3                   | 7                     | 6,508             | nw.             | 32         | n.          | 12                  | 15           | 5                           | 10              | 4.6   | 0.0  |
| Atlantic City.....  | 32                               | 68                         | 76                       | 30.01                                 | 30.07         | -.01                   | 46.5   | 1.8                    | 64       | 1     | 54            | 27    | 13                    | 39                    | 25                                 | 42                                | 39                        | 80                     | 1.03                    | -2.5                   | 7                     | 7,486             | w.              | 38         | nw.         | 12                  | 15           | 10                          | 5               | 3.8   | 0.0  |
| Cape May.....       | 17                               | 47                         | 51                       | 30.07                                 | 30.09         | -.01                   | 47.8   | 1.2                    | 65       | 10    | 54            | 30    | 13                    | 42                    | 23                                 | 44                                | 36                        | 72                     | 1.53                    | -2.3                   | 9                     | 5,570             | n.              | 32         | nw.         | 12                  | 13           | 10                          | 7               | 4.2   | 0.0  |
| Baltimore.....      | 123                              | 68                         | 82                       | 29.94                                 | 30.07         | -.03                   | 47.4   | 2.0                    | 72       | 11    | 56            | 31    | 13                    | 39                    | 24                                 | 41                                | 36                        | 71                     | 2.27                    | -0.8                   | 5                     | 3,197             | nw.             | 21         | n.          | 11                  | 11           | 8                           | 11              | 4.9   | 0.0  |
| Washington.....     | 112                              | 59                         | 76                       | 29.97                                 | 30.09         | -.02                   | 45.3   | 0.8                    | 72       | 11    | 55            | 24    | 27                    | 35                    | 30                                 | 40                                | 36                        | 78                     | 1.81                    | -1.0                   | 5                     | 3,773             | nw.             | 30         | nw.         | 12                  | 14           | 9                           | 7               | 4.0   | 0.0  |
| Cape Henry.....     | 5                                | 34                         | 34                       | 29.94                                 | 30.09         | -.03                   | 53.3   | 1.4                    | 73       | 11    | 60            | 27    | 14                    | 47                    | 25                                 | 43                                | 39                        | 79                     | 0.41                    | -3.2                   | 6                     | 8,960             | sw.             | 44         | nw.         | 12                  | 15           | 10                          | 5               | 4.5   | 0.0  |
| Lynchburg.....      | 685                              | 88                         | 88                       | 29.94                                 | 30.09         | -.03                   | 48.8   | 2.5                    | 73       | 11    | 60            | 28    | 27                    | 37                    | 34                                 | 43                                | 39                        | 79                     | 2.22                    | -0.7                   | 4                     | 2,003             | sw.             | 23         | nw.         | 1                   | 14           | 12                          | 4               | 4.1   | 0.0  |
| Norfolk.....        | 92                               | 102                        | 111                      | 29.99                                 | 30.09         | -.01                   | 52.8   | 2.5                    | 72       | 19    | 60            | 35    | 25                    | 46                    | 34                                 | 47                                | 44                        | 78                     | 0.70                    | -2.4                   | 5                     | 5,581             | n.              | 25         | w.          | 3                   | 17           | 7                           | 6               | 4.2   | 0.0  |
| Richmond.....       | 144                              | 98                         | 105                      | 29.99                                 | 30.09         | -.01                   | 50.0   | 2.2                    | 74       | 19    | 60            | 29    | 27                    | 40                    | 33                                 | 47                                | 44                        | 78                     | 1.19                    | -2.4                   | 5                     | 5,670             | n.              | 24         | n.          | 12                  | 13           | 9                           | 8               | 4.2   | 0.0  |
| S. Atlantic States. |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |            |             |                     |              |                             |                 |       |      |
| Charlotte.....      | 773                              | 68                         | 76                       | 29.26                                 | 30.09         | -.02                   | 52.0   | 2.1                    | 72       | 1     | 62            | 32    | 4                     | 42                    | 30                                 | 46                                | 41                        | 73                     | 1.91                    | -1.1                   | 8                     | 4,298             | ne.             | 36         | w.          | 3                   | 17           | 7                           | 6               | 3.6   | 0.0  |
| Hatteras.....       | 11                               | 17                         | 36                       | 30.06                                 | 30.07         | -.01                   | 57.4   | 1.8                    | 74       | 3     | 62            | 46    | 14                    | 53                    | 17                                 | 54                                | 51                        | 82                     | 2.21                    | -3.0                   | 7                     | 8,982             | n.              | 38         | sw.         | 1                   | 13           | 12                          | 5               | 4.4   | 0.0  |
| Kittyhawk.....      | 9                                | 12                         | 30                       | 30.06                                 | 30.07         | -.01                   | 54.8   | 1.3                    | 69       | * 60  | 40            | 14    | 49                    | 30                    | 20                                 | 44                                | 40                        | 70                     | 1.43                    | -2.6                   | 6                     | 10,310            | n.              | 38         | sw.         | 1                   | 17           | 11                          | 2               | 3.7   | 0.0  |
| Raleigh.....        | 375                              | 93                         | 101                      | 29.70                                 | 30.11         | -.03                   | 51.8   | 2.2                    | 75       | 23    | 62            | 32    | 13                    | 42                    | 30                                 | 46                                | 42                        | 80                     | 0.50                    | -1.7                   | 6                     | 3,999             | n.              | 19         | n.          | 25                  | 20           | 5                           | 5               | 3.2   | 0.0  |
| Wilmington.....     | 78                               | 82                         | 90                       | 30.00                                 | 30.09         | -.01                   | 56.0   | 1.4                    | 77       | 23    | 65            | 38    | 13                    | 47                    | 24                                 | 50                                | 47                        | 82                     | 1.09                    | -1.4                   | 7                     | 4,362             | ne.             | 20         | w.          | 1                   | 14           | 10                          | 6               | 4.0   | 0.0  |
| Charleston.....     | 48                               | 14                         | 92                       | 30.06                                 | 30.11         | +.01                   | 61.2   | 3.6                    | 83       | 23    | 68            | 44    | 4                     | 54                    | 21                                 | 54                                | 50                        | 76                     | 4.95                    | +2.0                   | 7                     | 6,556             | n.              | 42         | ne.         | 25                  | 12           | 9                           | 9               | 4.4   | 0.0  |
| Columbia.....       | 180                              | 89                         | 103                      | 29.89                                 | 30.09         | -.01                   | 55.2   | 0.3                    | 79       | 23    | 67            | 33    | 4                     | 44                    | 33                                 | 44                                | 33                        | 76                     | 1.89                    | -0.4                   | 5                     | 3,459             | nw.             | 24         | ne.         | 25                  | 15           | 10                          | 5               | 3.8   | 0.0  |
| Augusta.....        | 65                               | 79                         | 89                       | 30.02                                 | 30.08         | -.04                   | 61.0   | 3.2                    | 81       | 23    | 70            | 41    | 4                     | 52                    | 25                                 | 54                                | 51                        | 80                     | 2.02                    | -0.3                   | 2                     | 4,402             | ne.             | 22         | sw.         | 25                  | 15           | 10                          | 5               | 3.8   | 0.0  |
| Jacksonville.....   | 43                               | 69                         | 84                       | 30.02                                 | 30.07         | -.01                   | 64.6   | 3.2                    | 81       | 23    | 73            | 45    | 6                     | 56                    | 25                                 | 58                                | 56                        | 85                     | 0.07                    | -2.4                   | 2                     | 4,412             | ne.             | 24         | s.          | 25                  | 14           | 12                          | 4               | 3.8   | 0.0  |
| Florida Peninsula.  |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |            |             |                     |              |                             |                 |       |      |
| Jupiter.....        | 28                               | 13                         | 30                       | 29.99                                 | 30.02         | -.03                   | 72.4   | 0.6                    | 84       | 23    | 78            | 56    | 30                    | 67                    | 16                                 | 66                                | 63                        | 77                     | 0.99                    | -2.4                   | 9                     | 7,215             | e.              | 27         | n.          | 9                   | 11           | 13                          | 6               | 5.0   | 0.0  |
| Key West.....       | 22                               | 43                         | 50                       | 29.99                                 | 30.01         | -.03                   | 74.6   | 0.4                    | 82       | 1     | 78            | 69    | 30                    | 71                    | 10                                 | 69                                | 67                        | 79                     | 0.95                    | -1.8                   | 7                     | 8,525             | n.              | 30         | ne.         | 10                  | 14           | 10                          | 6               | 4.7   | 0.0  |
| Tampa.....          | 36                               | 60                         | 67                       | 30.00                                 | 30.04         | -.03                   | 67.1   | 0.3                    | 81       | 21    | 76            | 50    | 30                    | 59                    | 24                                 | 60                                | 57                        | 78                     | 0.24                    | -1.7                   | 4                     | 3,996             | n.              | 25         | sw.         | 25                  | 16           | 7                           | 7               | 4.5   | 0.0  |
| East Gulf States.   |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |            |             |                     |              |                             |                 |       |      |
| Atlanta.....        | 1,174                            | 139                        | 156                      | 28.84                                 | 30.10         | -.04                   | 54.6   | +2.8                   | 72       | 10    | 63            | 33    | 3                     | 46                    | 28                                 | 47                                | 43                        | 74                     | 2.65                    | -0.9                   | 7                     | 7,143             | nw.             | 34         | ne.         | 25                  | 12           | 10                          | 8               | 4.5   | 0.0  |
| Macon.....          | 370                              | 93                         | 99                       | 29.99                                 | 30.10         | -.04                   | 55.8   | 2.8                    | 76       | 1     | 66            | 33    | 3                     | 45                    | 33                                 | 45                                | 33                        | 76                     | 1.73                    | -1.1                   | 5                     | 3,957             | nw.             | 26         | ne.         | 25                  | 9            | 12                          | 9               | 4.9   | 0.0  |
| Pensacola.....      | 56                               | 78                         | 90                       | 30.00                                 | 30.06         | -.04                   | 62.6   | 3.4                    | 76       | 14    | 70            | 39    | 3                     | 56                    | 25                                 | 55                                | 52                        | 80                     | 4.99                    | +1.2                   | 6                     | 6,230             | n.              | 36         | ne.         | 25                  | 16           | 7                           | 7               | 4.4   | 0.0  |
| Mobile.....         | 57                               | 88                         | 96                       | 30.00                                 | 30.06         | -.04                   | 61.0   | 3.1                    | 80       | 23    | 70            | 35    | 4                     | 52                    | 28                                 | 55                                | 52                        | 80                     | 2.62                    | -1.2                   | 5                     | 4,275             | n.              | 26         | n.          | 2                   | 18           | 3                           | 9               | 4.6   | 0.0  |
| Montgomery.....     | 221                              | 100                        | 112                      | 29.83                                 | 30.07         | -.06                   | 58.4   | 3.2                    | 79       | 1     | 69            | 34    | 5                     | 48                    | 34                                 | 52                                | 48                        | 78                     | 1.80                    | -1.6                   | 6                     | 3,434             | e.              | 25         | e.          | 25                  | 16           | 3                           | 11              | 4.4   | 0.0  |
| Meridian.....       | 375                              | 84                         | 93                       | 29.76                                 | 30.03         | -.10                   | 56.2   | 2.8                    | 78       | 16    | 68            | 26    | 4                     | 44                    | 39                                 | 44                                | 39                        | 76                     | 2.29                    | -0.9                   | 5                     | 3,471             | ne.             | 28         | e.          | 25                  | 12           | 8                           | 10              | 5.1   | 0.0  |
| Vicksburg.....      | 247                              | 65                         | 73                       | 29.76                                 | 30.03         | -.10                   | 59.7   | 4.3                    | 80       | 13    | 69            | 33    | 3                     | 50                    | 30                                 | 52                                | 47                        | 53                     | 0.85                    | -4.0                   | 6                     | 4,485             | nw.             | 29         | w.          | 30                  | 13           | 8                           | 9               | 4.5   | 0.0  |
| New Orleans.....    | 54                               | 112                        | 120                      | 29.99                                 | 30.05         | -.03                   | 63.1   | 2.4                    | 80       | 11    | 70            |       | 4                     | 56                    | 21                                 | 56                                | 53                        | 77                     | 1.70                    | -2.5                   | 5                     | 5,230             | se.             | 30         | nw.         | 2                   | 15           | 8                           | 7               | 4.3   | 0.0  |
| Port Eads.....      | 27                               | 11                         | 37                       | 30.00                                 | 30.01         | -.03                   | 67.0   | +2.2                   | 82       | 17    | 74            | 46    | *                     | 60                    | 24                                 | 60                                | 24                        | 72                     | 3.80                    | +1.0                   | 7                     | 7,215             | se.             | 30         | nw.         | 2                   | 15           | 8                           | 7               | 4.3   | 0.0  |
| West                |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |            |             |                     |              |                             |                 |       |      |



TABLE I.—Climatological data for Weather Bureau Stations, November, 1899—Continued.

| Stations.             | Elevation of instruments         |                            |                          | Pressure, in inches.                  |               |                        | Temperature of the air, in degrees Fahrenheit. |                        |          |       |               |       |                       |                       |                                    |                                   | Precipitation, in inches. |                        |                         | Wind.                  |                       |                   |                 | Clear days. | Partly cloudy days. | Cloudy days. | Average cloudiness, tenths. | Total snowfall. |            |
|-----------------------|----------------------------------|----------------------------|--------------------------|---------------------------------------|---------------|------------------------|--|------------------------|----------|-------|---------------|-------|-----------------------|-----------------------|------------------------------------|-----------------------------------|---------------------------|------------------------|-------------------------|------------------------|-----------------------|-------------------|-----------------|-------------|---------------------|--------------|-----------------------------|-----------------|------------|
|                       | Barometer above sea level, feet. | Thermometers above ground. | Anemometer above ground. | Mean actual, 8 a. m. and 8 p. m. + 2. | Mean reduced. | Departure from normal. | Mean max. and min. + 2.                        | Departure from normal. | Maximum. | Date. | Mean minimum. | Date. | Greatest daily range. | Mean wet thermometer. | Mean temperature of the dew-point. | Mean relative humidity, per cent. | Total.                    | Departure from normal. | Days with .01, or more. | Total movement, miles. | Prevailing direction. | Maximum velocity. | Miles per hour. |             |                     |              |                             |                 | Direction. |
| Upper Miss. Valley.   |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Minneapolis.....      | 99                               | 308                        |                          | 46.5                                  | 9.1           | 61                     | 6  | 48                     | 23       | 2     | 34            | 29    | 77                    | 1.40                  | 0.3                                | 7,058                             | s.                        | 33                     | se.                     | 16                     | 6                     | 12                | 12              | 5.8         | 1.0                 |              |                             |                 |            |
| St. Paul.....         | 837                              | 114                        | 124                      | 40.8                                  | 11.5          | 61                     | 6  | 48                     | 23       | 2     | 34            | 30    | 36                    | 33                    | 78                                 | 0.81                              | 0.3                       | 4,207                  | se.                     | 27                     | se.                   | 16                | 10              | 7           | 13                  | 5.8          | 0.3                         |                 |            |
| La Crosse.....        | 720                              | 70                         | 78                       | 42.0                                  | 8.6           | 65                     | 17   | 50                     | 20       | 3     | 34            | 31    |                       |                       | 0.67                               | 0.8                               | 3,965                     | s.                     | 30                      | nw.                    | 1                     | 13                | 4               | 13          | 5.4                 | 0.1          |                             |                 |            |
| Davenport.....        | 606                              | 71                         | 79                       | 46.4                                  | 9.6           | 70                     | 17   | 55                     | 26       | 4     | 38            | 30    | 41                    | 37                    | 77                                 | 0.90                              | 1.2                       | 4,790                  | ne.                     | 22                     | sw.                   | 4                 | 10              | 6           | 14                  | 5.9          | T.                          |                 |            |
| Des Moines.....       | 897                              | 84                         | 88                       | 45.8                                  | 9.4           | 70                     | 16   | 55                     | 20       | 3     | 37            | 38    | 40                    | 36                    | 77                                 | 1.76                              | 0.0                       | 4,913                  | ne.                     | 27                     | sw.                   | 16                | 11              | 10          | 9                   | 5.4          | T.                          |                 |            |
| Dubuque.....          | 698                              | 101                        | 109                      | 44.0                                  | 9.0           | 69                     | 17   | 53                     | 23       | 25    | 35            | 34    | 38                    | 33                    | 73                                 | 0.97                              | 1.1                       | 4,442                  | se.                     | 27                     | nw.                   | 1                 | 10              | 8           | 12                  | 6.0          | T.                          |                 |            |
| Keokuk.....           | 614                              | 63                         | 78                       | 48.8                                  | 10.0          | 72                     | 16   | 57                     | 28       | 4     | 41            | 30    | 43                    | 39                    | 77                                 | 1.19                              | 0.9                       | 4,578                  | sw.                     | 24                     | s.                    | 16                | 11              | 8           | 11                  | 5.1          | T.                          |                 |            |
| Cairo.....            | 359                              | 87                         | 93                       | 52.8                                  | 6.6           | 70                     | 10   | 61                     | 28       | 4     | 45            | 30    | 47                    | 44                    | 79                                 | 3.05                              | 1.2                       | 5,896                  | s.                      | 30                     | n.                    | 25                | 5               | 11          | 14                  | 6.6          | T.                          |                 |            |
| Springfield, Ill..... | 644                              | 82                         | 92                       | 47.7                                  | 6.8           | 70                     | 10   | 56                     | 27       | 27    | 40            | 27    | 42                    | 39                    | 79                                 | 1.84                              | 1.1                       | 6,766                  | s.                      | 23                     | w.                    | 30                | 6               | 8           | 16                  | 6.8          | 3.6                         |                 |            |
| Hannibal.....         | 534                              | 75                         | 110                      | 49.5                                  | 9.3           | 74                     | 16   | 59                     | 27       | 4     | 40            | 36    |                       |                       | 1.83                               | 0.3                               | 6,608                     | sw.                    | 30                      | s.                     | 10                    | 12                | 8               | 10          | 5.2                 | 0.5          |                             |                 |            |
| St. Louis.....        | 567                              | 111                        | 210                      | 52.2                                  | 8.6           | 76                     | 10   | 60                     | 31       | 3     | 44            | 28    | 46                    | 41                    | 73                                 | 1.95                              | 1.2                       | 7,382                  | s.                      | 36                     | w.                    | 30                | 8               | 7           | 15                  | 6.0          | 3.7                         |                 |            |
| Missouri Valley.      |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Columbia.....         | 783                              | 4                          | 84                       | 50.2                                  | 7.8           | 77                     | 16   | 61                     | 20       | 4     | 40            | 42    |                       |                       | 1.22                               | 1.6                               | 6,254                     | sw.                    | 30                      | sw.                    | 14                    | 10                | 5               | 15          | 6.1                 | T.           |                             |                 |            |
| Kansas City.....      | 963                              | 78                         | 95                       | 50.4                                  | 9.7           | 76                     | 13   | 58                     | 26       | 3     | 42            | 31    | 44                    | 38                    | 70                                 | 1.62                              | 0.6                       | 5,972                  | se.                     | 30                     | s.                    | 16                | 8               | 8           | 14                  | 6.1          | T.                          |                 |            |
| Springfield, Mo.....  | 1,324                            | 100                        | 103                      | 50.5                                  | 7.0           | 74                     | 17   | 58                     | 23       | 3     | 43            | 32    | 46                    | 42                    | 80                                 | 1.75                              | 1.8                       | 7,424                  | se.                     | 31                     | nw.                   | 30                | 13              | 7           | 10                  | 5.1          | T.                          |                 |            |
| Topeka.....           | 81                               |                            |                          | 49.8                                  | 8.6           | 78                     | 15   | 60                     | 21       | 3     | 40            | 35    |                       |                       | 0.34                               | 0.9                               | 4,000                     | s.                     |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Lincoln.....          | 1,199                            | 75                         | 84                       | 46.6                                  | 8.5           | 71                     | 9  | 57                     | 19       | 3     | 36            | 37    | 40                    | 36                    | 75                                 | 0.58                              | 0.2                       | 6,488                  | ne.                     | 38                     | n.                    | 30                | 12              | 8           | 10                  | 5.2          |                             |                 |            |
| Omaha.....            | 1,105                            | 115                        | 121                      | 46.8                                  | 10.2          | 70                     | 9  | 56                     | 21       | 2     | 38            | 32    | 41                    | 36                    | 74                                 | 1.38                              | 0.3                       | 5,256                  | n.                      | 40                     | n.                    | 30                | 11              | 7           | 12                  | 5.7          | T.                          |                 |            |
| Sioux City.....       | 1,139                            | 96                         | 164                      | 43.4                                  | 9.1           | 68                     | 16   | 53                     | 14       | 3     | 34            | 35    |                       |                       | 0.85                               | 0.1                               | 5,706                     | nw.                    | 38                      | nw.                    | 30                    | 9                 | 13              | 8           | 4.8                 | T.           |                             |                 |            |
| Pierre.....           | 1,572                            | 11                         | 19                       | 41.8                                  | 9.9           | 70                     | 5  | 54                     | 11       | 2     | 30            | 44    | 33                    | 25                    | 62                                 | 0.32                              | 0.1                       | 5,333                  | e.                      | 30                     | e.                    | 16                | 12              | 8           | 10                  | 4.8          |                             |                 |            |
| Huron.....            | 1,306                            | 56                         | 67                       | 41.0                                  | 11.5          | 68                     | 8  | 54                     | 12       | 2     | 28            | 46    | 34                    | 29                    | 75                                 | 0.16                              | 0.4                       | 6,799                  | se.                     | 42                     | se.                   | 16                | 10              | 12          | 8                   | 4.8          | T.                          |                 |            |
| Yankton.....          | 1,234                            | 52                         | 58                       | 44.8                                  | 12.0          | 71                     | 16   | 55                     | 15       | 3     | 34            | 45    |                       |                       | 0.64                               | 0.0                               | 4,786                     | e.                     | 32                      | s.                     | 16                    | 8                 | 13              | 9           | 5.6                 | 0.3          |                             |                 |            |
| Northern Slope.       |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Havre.....            | 2,494                            | 46                         | 47                       | 40.5                                  | 10.6          | 67                     | 14   | 53                     | 15       | 26    | 28            | 39    | 35                    | 30                    | 75                                 | 0.44                              | 0.2                       | 6,555                  | sw.                     | 52                     | sw.                   | 28                | 12              | 14          | 4                   | 4.4          | 2.1                         |                 |            |
| Miles City.....       | 2,371                            | 42                         | 50                       | 41.5                                  | 10.2          | 68                     | 14   | 54                     | 18       | *     | 28            | 37    | 36                    | 34                    | 89                                 | 0.39                              | 0.0                       | 3,281                  | s.                      | 27                     | w.                    | 28                | 21              | 7           | 2                   | 2.6          |                             |                 |            |
| Helena.....           | 4,108                            | 88                         | 93                       | 40.2                                  | 8.7           | 65                     | 14   | 48                     | 21       | 25    | 32            | 27    | 34                    | 27                    | 64                                 | 0.26                              | 0.4                       | 4,213                  | sw.                     | 28                     | sw.                   | 28                | 8               | 14          | 5.8                 | T.           |                             |                 |            |
| Kalispell.....        | 2,964                            | 45                         | 51                       | 39.0                                  |               | 58                     | 14   | 46                     | 22       | 25    | 32            | 24    | 36                    | 33                    | 84                                 | 0.96                              |                           | 2,960                  | nw.                     | 25                     | sw.                   | 28                | 3               | 13          | 14                  | 6.9          | 2.4                         |                 |            |
| Rapid City.....       | 3,351                            | 46                         | 50                       | 43.3                                  | 8.4           | 67                     | 19   | 55                     | 17       | 2     | 31            | 39    | 34                    | 26                    | 61                                 | 0.19                              | 0.2                       | 4,738                  | nw.                     | 27                     | nw.                   | 30                | 21              | 8           | 1                   | 2.5          |                             |                 |            |
| Cheyenne.....         | 6,084                            | 56                         | 64                       | 40.2                                  | 6.0           | 65                     | 29   | 53                     | 14       | 2     | 27            | 36    | 31                    | 18                    | 46                                 | 0.07                              | 0.3                       | 7,690                  | nw.                     | 48                     | nw.                   | 28                | 12              | 8           | 10                  | 4.8          | T.                          |                 |            |
| Lander.....           | 5,372                            | 28                         | 36                       | 37.6                                  | 8.0           | 60                     | 14   | 53                     | 12       | 26    | 22            | 40    | 28                    | 20                    | 58                                 | T.                                | 0.8                       | 0                      | 2,233                   | sw.                    | 32                    | sw.               | 29              | 13          | 12                  | 5            | 3.9                         |                 |            |
| North Platte.....     | 2,826                            | 43                         | 52                       | 43.0                                  | 7.8           | 71                     | 14   | 58                     | 5        | 2     | 28            | 47    | 35                    | 28                    | 67                                 | 1.59                              | 1.2                       | 4,813                  | w.                      | 38                     | nw.                   | 30                | 12              | 12          | 6                   | 4.7          |                             |                 |            |
| Middle Slope.         |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Denver.....           | 5,290                            | 79                         | 151                      | 44.8                                  | 6.8           | 74                     | 29   | 58                     | 22       | 19    | 31            | 41    | 41                    | 34                    | 20                                 | 42                                | T.                        | 0.6                    | 0                       | 5,800                  | s.                    | 51                | nw.             | 29          | 23                  | 3            | 4                           | 2.6             | T.         |
| Pueblo.....           | 4,682                            | 80                         | 86                       | 44.2                                  | 5.4           | 73                     | 29   | 58                     | 22       | 27    | 30            | 42    | 36                    | 27                    | 52                                 | 0.50                              | 0.2                       | 4,511                  | nw.                     | 42                     | nw.                   | 16                | 17              | 9           | 4                   | 3.9          |                             |                 |            |
| Concordia.....        | 1,398                            | 42                         | 47                       | 48.7                                  | 8.7           | 76                     | 15   | 59                     | 20       | 3     | 39            | 42    | 42                    | 38                    | 77                                 | 0.76                              | 0.1                       | 3,857                  | s.                      | 24                     | s.                    | 24                | 8               | 9           | 10                  | 5.2          |                             |                 |            |
| Dodge.....            | 2,504                            | 44                         | 52                       | 48.0                                  | 7.8           | 75                     | 9  | 60                     | 16       | 2     | 37            | 40    | 41                    | 36                    | 76                                 | 1.15                              | 0.7                       | 6,516                  | n.                      | 41                     | nw.                   | 30                | 11              | 11          | 8                   | 5.1          |                             |                 |            |
| Wichita.....          | 1,351                            | 78                         | 85                       | 50.9                                  | 8.1           | 75                     | 13   | 60                     | 23       | 3     | 42            | 34    | 44                    | 39                    | 73                                 | 1.09                              | 0.1                       | 4,593                  | s.                      | 38                     | nw.                   | 30                | 7               | 9           | 14                  | 5.7          |                             |                 |            |
| Oklahoma.....         | 1,218                            | 54                         | 62                       | 53.2                                  | 3.2           | 78                     | 17   | 62                     | 25       | 3     | 45            | 34    | 46                    | 41                    | 72                                 | 7.80                              | 5.9                       | 7,135                  | s.                      | 36                     | nw.                   | 30                | 16              | 1           | 13                  | 5.1          |                             |                 |            |
| Southern Slope.       |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Abilene.....          | 1,749                            | 45                         | 54                       | 52.4                                  | 4.2           | 80                     | 10   | 66                     | 28       | 3     | 48            | 30    | 50                    | 46                    | 77                                 | 2.36                              | 1.0                       | 6,952                  | se.                     | 30                     | nw.                   | 30                | 15              | 6           | 9                   | 4.2          |                             |                 |            |
| Amarillo.....         | 3,691                            | 54                         | 61                       | 48.2                                  | 3.7           | 76                     | 13   | 58                     | 21       | 2     | 38            | 33    | 42                    | 37                    | 72                                 | 3.24                              | 2.9                       | 7,382                  | n.                      | 46                     | n.                    | 30                | 15              | 5           | 10                  | 4.3          | 2.4                         |                 |            |
| Southern Plateau.     |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| El Paso.....          | 3,767                            | 10                         | 110                      | 54.0                                  | 2.5           | 85                     | 12   | 69                     | 28       | 3     | 39            | 45    | 41                    | 27                    | 44                                 | 0.64                              | 0.1                       | 6,299                  | nw.                     | 44                     | nw.                   | 20                | 18              | 9           | 3                   | 2.7          |                             |                 |            |
| Santa Fe.....         | 6,998                            | 47                         | 50                       | 54.0                                  | 4.0           | 65                     | 12   | 51                     | 22       | 2     | 32            | 27    | 31                    | 18                    | 44                                 | 0.44                              | 0.3                       | 4,119                  | ne.                     | 35                     | sw.                   | 15                | 22              | 6           | 3                   | 2.6          | 1.6                         |                 |            |
| Flagstaff.....        | 6,885                            | 12                         | 25                       | 38.6                                  |               | 63                     | 8  | 53                     | 14       | 21    | 24            | 32    | 32                    |                       |                                    | 1.44                              |                           | 3                      | ne.                     |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Phoenix.....          | 1,076                            | 47                         | 57                       | 60.9                                  | 3.0           | 85                     | 7  | 75                     | 40       | 27    | 47            | 38    | 48                    | 36                    | 46                                 | 0.55                              | 0.1                       | 2,654                  | e.                      | 26                     | e.                    | 15                | 18              | 11          | 1                   | 5.0          |                             |                 |            |
| Yuma.....             | 141                              | 16                         | 50                       | 63.4                                  | 1.5           | 86                     | 7  | 78                     | 41       | 22    | 49            | 38    | 51                    | 39                    | 46                                 | 0.50                              | 0.2                       | 1,414                  | n.                      | 41                     | w.                    | 14                | 26              | 3           | 1                   | 1.6          |                             |                 |            |
| Independence.....     | 3,907                            | 51                         | 58                       | 49.4                                  | 1.6           | 70                     | 29   | 61                     | 30       | 25    | 38            | 33    | 40                    | 26                    | 42                                 | 0.85                              | 0.6                       | 4,156                  | nw.                     | 34                     | s.                    | 21                | 16              | 12          | 2                   | 3.3          |                             |                 |            |
| Middle Plateau.       |                                  |                            |                          |                                       |               |                        |  |                        |          |       |               |       |                       |                       |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |
| Carson City.....      | 4,720                            | 82                         | 92                       | 42.9                                  | 1.6           | 68                     | 28   | 55                     | 30       | 23    | 30            | 42    | 36                    | 28                    | 60                                 | 0.73                              | 0.8                       | 3,978                  | w.                      | 60                     | sw.                   | 29                | 2               | 16          | 12                  | 6.9          |                             |                 |            |
| Winnemucca.....       | 4,340                            | 59                         | 70                       | 40.5                                  | 3.4           | 63                     | 8  | 53                     | 17       | 23    | 28            | 42    | 35                    | 26                    | 59                                 | 0.24                              | 0.3                       | 4,532                  | ne.                     | 75                     | w.                    | 29                | 6               | 9           | 15                  | 6.8          |                             |                 |            |
| Cedar City.....       | 5,850                            | 36                         | 47                       | 45.8                                  |               | 69                     | 28   | 55                     | 23       | 30    | 36            | 29    | 36                    | 22                    | 45                                 | 0.39                              |                           | 4,247                  | se.                     | 26                     | n.                    | 22                | 17              | 4           | 9                   | 8.8          | 2.0                         |                 |            |
| Salt Lake City.....   | 4,360                            | 105                        | 110                      | 46.4                                  | 6.6           | 63                     | 8  | 56                     | 28       | 26    | 37            | 26    | 39                    | 32                    |                                    |                                   |                           |                        |                         |                        |                       |                   |                 |             |                     |              |                             |                 |            |

TABLE II.—Climatological record of voluntary and other cooperating observers, November, 1899.

| Temperature.<br>(Fahrenheit.) |    |          |      |       |  | Precipitation.        |                      | Temperature.<br>(Fahrenheit.) |    |          |      |       |  | Precipitation.        |                         | Temperature.<br>(Fahrenheit.) |      |          |       |       |  | Precipitation.        |                      |
|-------------------------------|----|----------|------|-------|--|-----------------------|----------------------|-------------------------------|----|----------|------|-------|--|-----------------------|-------------------------|-------------------------------|------|----------|-------|-------|--|-----------------------|----------------------|
| Maximum.                      |    | Minimum. |      | Mean. |  | Rain and melted snow. | Total depth of snow. | Maximum.                      |    | Minimum. |      | Mean. |  | Rain and melted snow. | Total depth of snow.    | Maximum.                      |      | Minimum. |       | Mean. |  | Rain and melted snow. | Total depth of snow. |
| Stations.                     |    |          |      |       |  |                       |                      | Stations.                     |    |          |      |       |  |                       |                         | Stations.                     |      |          |       |       |  |                       |                      |
| Alabama.                      |    |          |      |       |  |                       |                      |                               |    |          |      |       |  |                       |                         |                               |      |          |       |       |  |                       |                      |
| Ashville.....                 | 82 | 23       | 53.7 | 3.81  |  |                       |                      | Supai.....                    | 75 | 37       | 54.0 | 0.10  |  |                       |                         | Delano*.....                  | 78   | 41       | 54.3  | 1.29  |  |                       |                      |
| Bermuda.....                  | 81 | 28       | 55.2 | 4.86  |  |                       |                      | Texas Hill*.....              | 91 | 43       | 61.6 | 0.62  |  |                       |                         | Delta*.....                   | 73   | 40       | 53.0  | 19.60 |  |                       |                      |
| Birmingham.....               | 78 | 30       | 58.0 | 3.27  |  |                       |                      | Tonto.....                    | 86 | 31       | 54.2 | 0.64  |  |                       |                         | Dewey.....                    | 77   | 33       | 54.6  | 0.95  |  |                       |                      |
| Bridgeport.....               |    |          |      | 3.14  |  |                       |                      | Tuba.....                     | 79 | 25       | 50.1 | 0.26  |  |                       |                         | Drytown.....                  | 73   | 38       | 56.1  | 5.15  |  |                       |                      |
| Citronelle.....               | 79 | 34       | 61.0 | 4.54  |  |                       |                      | Tucson.....                   | 88 | 32       | 58.0 | 0.56  |  |                       |                         | Dunnigan*.....                | 67   | 40       | 54.2  | 3.39  |  |                       |                      |
| Clanton.....                  | 73 | 29       | 55.1 | 1.22  |  |                       |                      | Vail*.....                    | 86 | 40       | 57.0 | 0.04  |  |                       |                         | Durham*.....                  | 68   | 40       | 55.2  | 6.77  |  |                       |                      |
| Daphne.....                   | 76 | 33       | 59.0 | 1.70  |  |                       |                      | Walnut Grove.....             |    |          |      | 1.50  |  |                       | East Brother L. H.....  |                               |      |          | 2.35  |       |  |                       |                      |
| Decatur.....                  | 76 | 26       | 54.1 | 4.57  |  |                       |                      | Whitehills.....               | 78 | 34       | 56.6 | 1.42  |  |                       | Edmonton*.....          | 60                            | 27   | 41.5     | 13.09 | 6.0   |  |                       |                      |
| Demopolis.....                |    |          |      | 2.07  |  |                       |                      | Willcox*.....                 | 73 | 30       | 52.3 | 0.30  |  |                       | El Cajon.....           | 88                            | 35   | 59.4     | 1.39  |       |  |                       |                      |
| Elba.....                     | 81 | 20       | 54.4 | 3.21  |  |                       |                      | Winslow.....                  | 76 | 20       | 45.4 | 0.18  |  |                       | Elmwood.....            | 70                            | 36   | 58.5     | 3.51  |       |  |                       |                      |
| Eufaula.....                  | 80 | 29       | 57.4 | 1.15  |  |                       |                      | Yarnell.....                  |    |          |      | 2.07  |  |                       | Elsinore.....           | 90                            | 33   | 58.8     | 0.69  |       |  |                       |                      |
| Eutaw.....                    | 80 | 29       | 58.2 | 1.99  |  |                       |                      | Arkansas.                     |    |          |      |       |  | Escondido.....        | 85                      | 32                            | 54.4 | 1.99     |       |       |  |                       |                      |
| Evergreen.....                |    |          |      | 4.00  |  |                       |                      | Amity.....                    | 84 | 23       | 54.4 | 1.79  |  |                       | Fallbrook*.....         | 84                            | 41   | 57.4     | 2.90  |       |  |                       |                      |
| Florence.....                 |    |          |      | 2.79  |  |                       |                      | Arkadelphia.....              | 84 | 26       | 56.8 | 1.84  |  |                       | Folsom*.....            | 71                            | 41   | 55.4     | 5.45  |       |  |                       |                      |
| Florence*.....                | 76 | 26       | 54.4 | 2.83  |  |                       |                      | Arkansas City.....            |    |          |      | 1.45  |  | Fordey Dam.....       |                         |                               |      | 9.98     | 23.0  |       |  |                       |                      |
| Fort Deposit.....             | 79 | 34       | 57.7 | 3.60  |  |                       |                      | Batesville.....               | 82 | 25       | 54.6 | 2.36  |  |                       | Fort Bragg.....         |                               |      |          | 13.33 |       |  |                       |                      |
| Gadsden.....                  | 82 | 34       | 55.0 | 4.39  |  |                       |                      | Beachbranch.....              | 82 | 23       | 54.8 | 1.50  |  |                       | Fort Ross.....          | 71                            | 44   | 56.2     | 14.74 |       |  |                       |                      |
| Goodwater.....                | 79 | 25       | 53.6 | 2.70  |  |                       |                      | Blanchard Springs.....        | 80 | 23       | 55.7 | 1.75  |  |                       | Fort Tejon.....         |                               |      |          | 1.71  |       |  |                       |                      |
| Greensboro.....               | 77 | 31       | 57.4 | 1.75  |  |                       |                      | Camden.....                   |    |          |      | 2.15  |  | Georgetown.....       | 68                      | 33                            | 49.8 | 10.33    |       |       |  |                       |                      |
| Hamilton.....                 | 80 | 18       | 52.0 | 6.29  |  |                       |                      | Camden*.....                  | 82 | 25       | 55.0 | 2.42  |  |                       | Gilroy Hot Springs..... |                               |      |          | 3.36  |       |  |                       |                      |
| Healing Springs.....          | 83 | 28       | 58.9 | 3.99  |  |                       |                      | Canton.....                   | 76 | 20       | 52.0 | 6.22  |  |                       | Gilroy (near).....      | 74                            | 34   | 55.2     | 2.65  |       |  |                       |                      |
| Highland Home.....            | 78 | 34       | 56.6 | 1.01  |  |                       |                      | Conway.....                   | 85 | 20       | 56.4 | 1.75  |  |                       | Goshen*.....            | 73                            | 36   | 49.2     | 1.76  |       |  |                       |                      |
| Jasper.....                   |    |          |      | 5.45  |  |                       |                      | Corning.....                  | 78 | 20       | 52.2 | 2.34  |  | T.                    | Grand Island*.....      | 72                            | 42   | 56.6     | 3.52  |       |  |                       |                      |
| Lock No. 4.....               | 75 | 25       | 51.8 | 3.61  |  |                       |                      | Dallas.....                   | 78 | 26       | 56.8 | 4.61  |  |                       | Grass Valley.....       |                               |      |          | 11.58 |       |  |                       |                      |
| Madison Station.....          | 77 | 24       | 54.8 | 4.66  |  |                       |                      | Dardanelle.....               |    |          |      | 2.47  |  | Greenville.....       | 62                      | 24                            | 43.3 | 7.69     | 2.0   |       |  |                       |                      |
| Maple Grove.....              | 76 | 22       | 51.0 | 3.90  |  |                       |                      | Elon.....                     | 88 | 22       | 55.6 | 1.74  |  |                       | Hanford.....            | 74                            | 32   | 53.8     | 1.44  |       |  |                       |                      |
| Marion.....                   | 82 | 32       | 60.0 | 1.90  |  |                       |                      | Fayetteville.....             | 76 | 19       | 51.4 | 2.25  |  |                       | Healdsburg.....         | 74                            | 34   | 55.1     | 9.88  |       |  |                       |                      |
| Mount Willing.....            | 79 | 35       | 58.0 | 2.59  |  |                       |                      | Fulton.....                   |    |          |      | 1.98  |  | Hollister.....        | 72                      | 34                            | 54.6 | 2.32     |       |       |  |                       |                      |
| Newbern.....                  | 77 | 29       | 57.8 | 1.66  |  |                       |                      | Hardy.....                    | 75 | 24       | 52.4 | 5.86  |  |                       | Humboldt L. H.....      |                               |      |          | 17.09 |       |  |                       |                      |
| Newton.....                   | 75 | 30       | 55.6 | 1.18  |  |                       |                      | Helena.....                   |    |          |      | 3.26  |  | Indio*.....           | 85                      | 42                            | 59.1 | 0.60     |       |       |  |                       |                      |
| Oneonta.....                  | 73 | 23       | 52.6 | 3.99  |  |                       |                      | Helena*.....                  | 84 | 26       | 57.2 | 3.56  |  |                       | Iowa Hill*.....         | 64                            | 36   | 50.4     | 9.08  |       |  |                       |                      |
| Opelika.....                  | 76 | 34       | 55.0 | 1.75  |  |                       |                      | Hot Springs.....              | 82 | 24       | 56.1 | 2.01  |  |                       | Irvine.....             | 96                            | 46   | 65.9     | 0.54  |       |  |                       |                      |
| Oxanna.....                   | 75 | 26       | 53.2 | 2.50  |  |                       |                      | Hot Springs*.....             |    |          |      | 2.25  |  | Jackson.....          | 62                      | 34                            | 48.0 | 5.81     |       |       |  |                       |                      |
| Pineapple.....                | 81 | 24       | 55.2 | 2.35  |  |                       |                      | Jonesboro.....                | 78 | 20       | 54.6 | 2.89  |  |                       | Jolon.....              |                               |      |          | 1.50  |       |  |                       |                      |
| Pushmataha.....               | 80 | 28       | 56.9 | 3.31  |  |                       |                      | Keosauqua Ferry.....          | 78 | 20       | 53.4 | 2.82  |  | T.                    | Keene*.....             | 70                            | 33   | 51.3     | 3.16  |       |  |                       |                      |
| Riverton.....                 | 75 | 23       | 52.2 | 2.56  |  |                       |                      | Lacrosse.....                 | 77 | 21       | 52.8 | 3.86  |  |                       | Kennedy Gold Mine.....  | 65                            | 32   | 50.0     | 6.11  |       |  |                       |                      |
| Scottsboro.....               | 76 | 23       | 53.1 | 2.85  |  |                       |                      | Lonoke.....                   | 79 | 22       | 54.0 | 3.38  |  |                       | King City*.....         | 76                            | 42   | 52.0     | 1.15  |       |  |                       |                      |
| Selma.....                    | 81 | 30       | 57.0 | 1.50  |  |                       |                      | Luna Landing.....             | 82 | 24       | 57.3 | 1.52  |  |                       | Kingsburg*.....         | 70                            | 35   | 55.7     | 1.60  |       |  |                       |                      |
| Talladega.....                | 73 | 27       | 53.1 | 2.72  |  |                       |                      | Lutherville.....              | 78 | 22       | 53.0 | 2.31  |  |                       | Kono Tayee.....         | 62                            | 41   | 53.0     | 5.56  |       |  |                       |                      |
| Tallapoosa.....               |    |          |      | 2.17  |  |                       |                      | Malvern.....                  | 81 | 22       | 54.6 | 1.84  |  |                       | Lakeside.....           |                               |      |          | 1.65  |       |  |                       |                      |
| Tuscaloosa.....               | 76 | 26       | 54.8 | 3.30  |  |                       |                      | Marianna.....                 | 79 | 23       | 54.5 | 2.35  |  |                       | Lamesa.....             |                               |      |          | 1.48  |       |  |                       |                      |
| Tuskegee.....                 | 78 | 32       | 57.6 | 1.49  |  |                       |                      | Marvell.....                  | 80 | 24       | 56.1 | 2.74  |  |                       | Lankershim.....         | 75                            | 34   | 53.7     | 1.02  |       |  |                       |                      |
| Union Springs.....            | 77 | 33       | 57.3 | 1.10  |  |                       |                      | Moore.....                    |    |          |      | 1.94  |  | Laporte*.....         | 57                      | 27                            | 39.3 | 15.96    | 22.0  |       |  |                       |                      |
| Uniontown.....                | 81 | 31       | 59.7 | 1.63  |  |                       |                      | Mossville.....                | 75 | 20       | 49.6 | 5.10  |  |                       | Las Fuentes Ranch.....  |                               |      |          | 1.56  |       |  |                       |                      |
| Valleyhead.....               | 75 | 23       | 53.1 | 3.44  |  |                       |                      | Mount Nebo.....               | 72 | 26       | 54.4 | 2.15  |  |                       | Legrand.....            |                               |      |          | 1.87  |       |  |                       |                      |
| Warrior.....                  |    |          |      | 3.11  |  |                       |                      | Nashville.....                | 82 | 23       | 56.2 | 1.99  |  |                       | Lemon Cove.....         | 78                            | 39   | 57.8     | 2.48  |       |  |                       |                      |
| Wetumpka.....                 | 78 | 29       | 56.4 | 2.46  |  |                       |                      | New Gascony.....              | 80 | 22       | 55.1 | 2.55  |  |                       | Leicester*.....         | 77                            | 35   | 53.0     | 1.04  |       |  |                       |                      |
| Wilson*.....                  | 82 | 30       | 60.3 | 6.55  |  |                       |                      | Newport.....                  |    |          |      | 2.44  |  | Lick Observatory..... | 61                      | 32                            | 46.9 | 4.92     |       |       |  |                       |                      |
| Arizona.                      |    |          |      |       |  |                       |                      |                               |    |          |      |       |  |                       |                         |                               |      |          |       |       |  |                       |                      |
| Allaire Ranch.....            |    |          |      | 0.75  |  |                       |                      | Newport*.....                 | 80 | 23       | 54.6 | 2.44  |  |                       | Lime Point L. H.....    |                               |      |          | 3.81  |       |  |                       |                      |
| Arivaca.....                  | 97 | 31       | 59.0 | 1.07  |  |                       |                      | Newport*.....                 | 78 | 20       | 53.7 | 2.37  |  |                       | Lodi.....               | 68                            | 41   | 55.2     | 3.01  |       |  |                       |                      |
| Arizona Canal Co. Dam.....    | 86 | 47       | 65.0 | 0.00  |  |                       |                      | Oregon.....                   | 80 | 22       | 53.4 | 3.32  |  | T.                    | Los Gatos*.....         | 70                            | 36   | 53.6     | 5.84  |       |  |                       |                      |
| Aztec*.....                   | 86 | 40       | 60.9 | 1.00  |  |                       |                      | Oseola.....                   | 83 | 25       | 55.4 | 2.24  |  |                       | Malakoff Mine.....      | 67                            | 31   | 48.2     | 18.33 | 1.0   |  |                       |                      |
| Bisbee.....                   | 79 | 33       | 53.5 | 0.16  |  |                       |                      | Ozark.....                    | 77 | 21       | 55.7 | 1.66  |  |                       | Mammoth*.....           | 86                            | 50   | 65.4     | 0.23  |       |  |                       |                      |
| Blaisdell.....                | 88 | 50       | 65.2 | 0.50  |  |                       |                      | Pinebluff.....                | 82 | 33       | 55.7 | 2.82  |  |                       | Manzana.....            | 77                            | 37   | 54.4     | 0.71  |       |  |                       |                      |
| Bowie*.....                   | 62 | 36       | 48.1 | 0.00  |  |                       |                      | Pocahontas.....               | 75 | 24       | 52.2 | 2.71  |  | T.                    | Mare Island L. H.....   |                               |      |          | 3.29  |       |  |                       |                      |
| Buckeye.....                  | 85 | 33       | 59.3 | 0.70  |  |                       |                      | Pond.....                     | 77 | 17       | 50.1 | 2.85  |  |                       | Merced*.....            | 70                            | 35   | 54.1     | 1.74  |       |  |                       |                      |
| Camp Creek.....               | 77 | 38       | 56.2 | 0.67  |  |                       |                      | Powell.....                   | 81 | 19       | 52.0 | 2.30  |  |                       | Mills College.....      |                               |      |          | 5.44  |       |  |                       |                      |
| Casa Grande*.....             | 85 | 45       | 62.4 | 0.74  |  |                       |                      | Prescott.....                 | 87 | 25       | 58.5 |       |  |                       | Milo.....               |                               |      |          | 2.65  |       |  |                       |                      |
| Chamblee Camp.....            | 88 | 36       | 61.4 | 0.70  |  |                       |                      | Rison.....                    | 82 | 22       | 56.8 | 2.44  |  |                       | Milton (near)*.....     | 70                            | 42   | 54.2     | 3.87  |       |  |                       |                      |
| Cochise*.....                 | 72 | 33       | 46.4 | 0.00  |  |                       |                      | Russellville.....             | 76 | 24       | 54.6 | 2.54  |  |                       | Modesto*.....           | 73                            | 41   | 56.3     | 3.04  |       |  |                       |                      |
| Congress.....                 | 78 | 45       | 61.4 | 1.22  |  |                       |                      | Silversprings.....            | 79 | 20       | 52.5 | 1.98  |  |                       | Mohave*.....            | 72                            | 40   | 53.4     | 0.88  |       |  |                       |                      |
| Dragon Summit*.....           | 70 | 37       | 50.3 | 0.28  |  |                       |                      | Spiegelville.....             | 80 | 21       | 54.2 | 4.34  |  |                       | Mokelumne Hill*.....    |                               |      |          | 5.79  |       |  |                       |                      |
| Dudleyville.....              | 82 | 31       | 54.0 | 0.77  |  |                       |                      | Stuttgart.....                | 81 | 22       | 55.2 | 3.10  |  |                       | Monterey.....           | 76                            | 40   | 58.7     | 2.82  |       |  |                       |                      |
| Fort Apache.....              | 77 | 21       | 47.0 | 0.71  |  |                       |                      | Texasana.....                 | 82 | 30       | 58.2 | 1.49  |  |                       | Monterey*.....          | 70                            | 40   | 55.6     | 2.31  |       |  |                       |                      |
| Fort Defiance.....            | 60 | 17       | 37.4 | 0.6   |  |                       |                      |                               |    |          |      |       |  |                       |                         |                               |      |          |       |       |  |                       |                      |



TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.                    | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|------------------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                              | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| <i>California—Cont'd.</i>    | °                             | °        | °     | Ins.                  | Ins.                 |
| Pomona (near).....           | 85                            | 38       | 59.0  | 1.39                  |                      |
| Poway*.....                  | 86                            | 40       | 52.0  | 1.29                  |                      |
| Quincy.....                  | 86                            | 30       | 43.2  | 9.13                  | 1.0                  |
| Ranch House.....             | 86                            | 46       | 62.2  | 0.73                  |                      |
| Raymond.....                 | 79                            | 34       | 54.8  | 3.95                  |                      |
| Redding.....                 | 66                            | 38       | 53.2  | 8.50                  |                      |
| Redlands.....                | 83                            | 41       | 60.4  | 1.28                  |                      |
| Reedley.....                 | 74                            | 25       | 50.4  |                       |                      |
| Represa.....                 | 70                            | 40       | 55.7  | 5.52                  |                      |
| Rio Vista.....               | 68                            | 38       | 54.1  | 2.77                  |                      |
| Roe Island L. H.....         |                               |          |       | 3.35                  |                      |
| Rome.....                    | 79                            | 33       | 56.0  | 1.04                  |                      |
| Rosewood.....                | 70                            | 33       | 50.5  | 5.29                  |                      |
| Sacramento.....              | 70                            | 41       | 55.0  | 3.27                  |                      |
| Salinas*.....                | 72                            | 40       | 60.5  | 2.77                  |                      |
| Salton*.....                 | 88                            | 48       | 69.6  | 0.11                  |                      |
| San Bernardino.....          | 85                            | 36       | 58.8  | 1.47                  |                      |
| San Jacinto.....             | 81                            | 36       | 56.7  | 1.83                  |                      |
| San Leandro*.....            | 76                            | 45       | 59.8  | 4.76                  |                      |
| San Luis L. H.....           |                               |          |       | 2.41                  |                      |
| San Mateo*.....              | 71                            | 44       | 58.8  | 4.70                  |                      |
| San Miguel*.....             | 71                            | 31       | 51.2  | 0.87                  |                      |
| San Miguel Island.....       | 73                            | 46       | 58.4  | 1.56                  |                      |
| Santa Barbara.....           | 81                            | 45       | 60.4  | 1.97                  |                      |
| Santa Barbara L. H.....      |                               |          |       | 1.55                  |                      |
| Santa Clara.....             |                               |          |       | 2.23                  |                      |
| Santa Cruz.....              | 74                            | 37       | 55.4  | 3.70                  |                      |
| Santa Cruz L. H.....         |                               |          |       | 3.79                  |                      |
| Santa Maria.....             | 76                            | 39       | 59.2  | 1.21                  |                      |
| Santa Monica*.....           | 76                            | 48       | 57.9  | 1.52                  |                      |
| Santa Paula.....             | 84                            | 43       | 64.4  | 1.17                  |                      |
| Santa Rosa*.....             | 68                            | 41       | 53.5  | 5.44                  |                      |
| Shasta.....                  | 72                            | 37       | 51.7  | 11.29                 |                      |
| Sierra Madre.....            | 79                            | 43       | 60.4  | 1.73                  |                      |
| Snedden.....                 |                               |          |       | 0.47                  |                      |
| Sonoma.....                  |                               |          |       | 4.75                  |                      |
| S. E. Farallone L. H.....    |                               |          |       | 4.57                  |                      |
| Stanford University.....     | 68                            | 39       | 51.6  | 2.14                  |                      |
| Stockton.....                | 68                            | 38       | 53.8  | 2.90                  |                      |
| Summerdale.....              | 58                            | 24       | 42.5  | 7.25                  | 8.0                  |
| Susanville.....              | 59                            | 26       | 40.6  | 2.70                  |                      |
| Tehama*.....                 | 70                            | 44       | 55.2  | 3.97                  |                      |
| Tejon Ranch.....             | 80                            | 40       | 57.2  | 2.13                  |                      |
| Templeton*.....              | 73                            | 40       | 50.3  | 1.32                  |                      |
| Thermalito.....              | 76                            | 40       | 55.5  | 6.33                  |                      |
| Trinidad L. H.....           |                               |          |       | 15.02                 |                      |
| Truckee*.....                | 68                            | 30       | 43.4  | 2.80                  | 13.0                 |
| Tulare.....                  |                               |          |       | 1.21                  |                      |
| Tulare.....                  | 82                            | 34       | 55.8  | 1.32                  |                      |
| Ukiah.....                   | 70                            | 34       | 52.8  | 8.86                  |                      |
| Upperlake.....               | 74                            | 34       | 51.2  | 6.33                  |                      |
| Upper Mattole*.....          | 76                            | 38       | 52.9  | 32.85                 |                      |
| Vacaville*.....              | 74                            | 42       | 55.0  | 3.62                  |                      |
| Ventura.....                 | 77                            | 42       | 57.8  | 1.40                  |                      |
| Visalia.....                 | 77                            | 32       | 55.5  | 1.23                  |                      |
| Volcano Springs*.....        | 89                            | 44       | 61.3  | 0.30                  |                      |
| Walnut Creek.....            | 70                            | 42       | 56.6  | 3.39                  |                      |
| West Palmdale.....           |                               |          |       | 0.27                  |                      |
| Westpoint.....               |                               |          |       | 8.19                  |                      |
| West Saticoy.....            |                               |          |       | 1.60                  |                      |
| Wheatland.....               | 67                            | 38       | 53.6  | 4.26                  |                      |
| Williams*.....               | 72                            | 47       | 57.9  | 2.67                  |                      |
| Wilmington*.....             | 77                            | 45       | 59.9  | 1.03                  |                      |
| Wire Bridge*.....            | 67                            | 36       | 53.3  | 8.32                  |                      |
| Yerba Buena L. H.....        |                               |          |       | 3.27                  |                      |
| Yreka.....                   | 62                            | 30       | 45.7  | 5.00                  |                      |
| Yuba City*.....              | 72                            | 42       | 57.6  | 4.82                  |                      |
| <i>Colorado.</i>             |                               |          |       |                       |                      |
| Antlers.....                 | 61                            | 18       | 41.6  | 0.05                  |                      |
| Arkins.....                  |                               |          |       | 0.00                  |                      |
| Aspen.....                   |                               |          |       | 0.45                  | 3.0                  |
| Boulder.....                 | 76                            | 21       | 47.7  | T.                    |                      |
| Boxelder.....                |                               |          |       | 0.08                  |                      |
| Breckenridge.....            | 47                            | 1        | 24.8  | 0.35                  | 9.2                  |
| Buenavista.....              |                               |          |       | 0.35                  | 4.0                  |
| Canyon.....                  | 73                            | 21       | 47.2  | 0.28                  | T.                   |
| Castlerock.....              | 72                            | 13       | 41.0  | 0.17                  | 1.5                  |
| Cedaredge.....               | 68                            | 18       | 42.6  | 0.24                  |                      |
| Cheyenne Wells.....          | 71                            | 4        | 43.3  | 2.49                  |                      |
| Clearview*.....              | 60                            | 8        | 28.4  | 2.45                  | 34.5                 |
| Colorado Springs.....        | 69                            | 16       | 42.2  | 0.01                  | 0.2                  |
| Cope.....                    | 72                            | 17       | 43.0  | 1.10                  | 0.5                  |
| Cripple Creek.....           | 57                            | 16       | 36.7  | 0.33                  | 5.0                  |
| Crook.....                   | 72                            | 10       | 42.0  | 0.08                  |                      |
| Delta.....                   | 70                            | 13       | 43.0  | 0.07                  |                      |
| Dumont.....                  |                               |          |       | 0.42                  | 5.0                  |
| Durango.....                 | 60                            | 17       | 41.2  | 0.91                  |                      |
| Fairview.....                | 63                            | 5        | 37.0  | 0.32                  | 5.0                  |
| Fort Collins.....            | 70                            | 15       | 40.8  | T.                    | T.                   |
| Fox.....                     |                               |          |       | 1.22                  |                      |
| Garnett.....                 | 59                            | 9        | 33.7  | 0.38                  | 4.0                  |
| Georgetown.....              | 62                            | 18       | 37.2  |                       |                      |
| Gilman.....                  |                               |          |       | 0.35                  | 6.5                  |
| Gleneyrie.....               | 65                            | 19       | 42.6  | 0.10                  | 2.0                  |
| Glenwood.....                |                               |          |       | T.                    |                      |
| Greeley.....                 | 72                            | 13       | 41.0  | T.                    |                      |
| <i>Colorado—Cont'd.</i>      | °                             | °        | °     | Ins.                  | Ins.                 |
| Gunnison.....                | 56                            | -1       | 30.2  | 0.37                  | 4.0                  |
| Gypsum.....                  |                               |          |       | 0.00                  |                      |
| Hamp.....                    | 69                            | 11       | 39.6  | 0.51                  | 2.0                  |
| Hoehne.....                  | 68                            | 14       | 40.0  | 1.90                  | 6.0                  |
| Holly.....                   |                               |          |       | 3.16                  |                      |
| Holyoke (near).....          | 75                            | 11       | 42.5  | 0.90                  |                      |
| Hugo.....                    |                               |          |       | 0.40                  |                      |
| Husted.....                  | 66                            | 9        | 39.3  | 0.10                  | 1.5                  |
| Lake Moraine.....            | 50                            | 1        | 29.2  | 0.59                  | 12.5                 |
| Lamar.....                   | 78                            | 14       | 46.1  | 2.37                  |                      |
| Laporte.....                 |                               |          |       | 0.00                  |                      |
| Las Animas.....              | 74                            | 18       | 44.5  | 1.59                  |                      |
| Lay.....                     | 60                            | 7        | 34.7  | 0.28                  | 1.5                  |
| Leadville (near)*.....       | 48                            | 10       | 26.4  | 0.13                  | 3.2                  |
| Leroy.....                   | 76                            | 10       | 43.0  | 0.23                  | T.                   |
| Longs Peak.....              | 58                            | 6        | 34.8  | 0.02                  | 0.5                  |
| Mancos.....                  | 70                            | 15       | 41.7  | 0.98                  | 1.0                  |
| Marshall Pass.....           |                               |          |       | 1.42                  | 21.0                 |
| Meeker.....                  | 63                            | 12       | 36.4  | 0.12                  |                      |
| Montrose.....                | 77                            | 12       | 46.0  | 1.97                  |                      |
| Mitchell.....                |                               |          |       | 1.49                  | 20.5                 |
| Montrose.....                |                               |          |       | 0.04                  |                      |
| Moraine.....                 | 57                            | 9        | 30.7  | 0.00                  |                      |
| Pagoda.....                  | 63                            | 10       | 37.3  | 0.10                  | 1.0                  |
| Palmer.....                  |                               |          |       | 0.33                  | 3.5                  |
| Parachute.....               | 64                            | 19       | 42.4  | 0.27                  |                      |
| Perry Park.....              |                               |          |       | 0.02                  | 0.2                  |
| Rangely.....                 | 65                            | 8        | 34.6  | 0.69                  | T.                   |
| Rockyford.....               | 74                            | 19       | 43.9  | 2.40                  | T.                   |
| Ruby.....                    |                               |          |       | 2.82                  | 41.0                 |
| Saguache.....                | 58                            | 19       | 36.4  | 0.05                  |                      |
| Salida.....                  | 66                            | 7        | 40.8  | 0.60                  | 6.0                  |
| San Luis.....                | 62                            | 1        | 35.0  | 1.45                  | 11.5                 |
| Santa Clara*.....            | 61                            | 14       | 35.6  | 3.72                  | 36.0                 |
| Sapinero.....                |                               |          |       | 0.07                  | 1.0                  |
| Sargents.....                |                               |          |       | 0.68                  | 10.0                 |
| Selbert.....                 |                               |          |       | 1.87                  |                      |
| Strickler Tunnel.....        |                               |          |       | 0.73                  | 12.0                 |
| Trinidad.....                | 73                            | 22       | 44.4  | 1.86                  | 4.0                  |
| Troutvale.....               |                               | -11      | 30.6  | 0.66                  | 9.5                  |
| T. S. Ranch.....             | 66                            | 24       | 43.6  | T.                    |                      |
| Twinklakes.....              |                               |          |       | 1.51                  | 11.5                 |
| Vilas.....                   |                               |          |       | 3.38                  |                      |
| Wagon Wheel.....             | 61                            | -3       | 28.8  | 0.82                  | 11.0                 |
| Walden.....                  | 56                            | 2        | 32.6  | 0.13                  | 1.6                  |
| Wallet.....                  |                               |          |       | 2.00                  |                      |
| Westcliffe.....              | 58                            | 9        | 35.8  | 2.10                  | 14.8                 |
| Wray.....                    | 78                            | 3        | 43.4  | 1.16                  |                      |
| Yuma.....                    |                               |          |       | 0.90                  | 1.0                  |
| <i>Connecticut.</i>          |                               |          |       |                       |                      |
| Bridgeport.....              | 63                            | 22       | 41.7  | 1.99                  | 2.0                  |
| Canton.....                  | 58                            | 16       | 38.3  | 1.84                  | 2.0                  |
| Colchester.....              | 63                            | 22       | 40.8  | 2.44                  | 2.0                  |
| Falls Village.....           |                               |          |       | 1.47                  | 2.5                  |
| Greenfield Hill.....         |                               |          |       | 1.97                  | 1.4                  |
| Hartford.....                | 58                            | 22       | 39.8  | 1.57                  | 2.0                  |
| Hartford.....                |                               |          |       | 2.28                  | 2.0                  |
| Haywardville.....            | 62                            | 20       | 40.0  | 2.10                  | 2.5                  |
| Lake Konomoc.....            |                               |          |       | 1.49                  |                      |
| Middletown.....              | 62                            | 19       | 39.2  | 1.53                  | 1.1                  |
| New London.....              | 65                            | 27       | 43.1  | 1.34                  | 0.2                  |
| North Grosvenor Dale.....    | 64                            | 16       | 37.6  | 2.47                  | T.                   |
| Norwalk.....                 | 63                            | 17       | 39.6  | 1.92                  | 1.5                  |
| Southington.....             | 59                            | 19       | 39.6  | 2.15                  | 1.5                  |
| Storrs.....                  | 63                            | 19       | 38.4  | 2.10                  | 1.5                  |
| Volantown.....               | 66                            | 17       | 39.8  | 2.75                  |                      |
| Wallingford.....             |                               |          |       | 1.27                  | 1.0                  |
| Waterbury.....               | 60                            | 19       | 40.0  | 1.69                  | 2.0                  |
| West Cornwall.....           | 57                            | 20       | 37.4  | 1.59                  | 2.6                  |
| West Simsbury.....           |                               |          |       | 1.94                  | 1.5                  |
| Winsted*.....                | 56                            | 20       | 36.6  |                       |                      |
| <i>Delaware.</i>             |                               |          |       |                       |                      |
| Millsboro.....               | 70                            | 24       | 46.3  | 1.32                  |                      |
| Newark.....                  | 65                            | 22       | 43.4  | 2.26                  |                      |
| Seaford.....                 | 66                            | 25       | 45.2  | 2.60                  |                      |
| <i>District of Columbia.</i> |                               |          |       |                       |                      |
| Distributing Reservoir*..... | 70                            | 27       | 46.4  | 2.58                  |                      |
| Receiving Reservoir*.....    | 70                            | 26       | 44.0  | 3.08                  |                      |
| West Washington.....         | 75                            | 22       | 45.4  | 1.38                  | T.                   |
| <i>Florida.</i>              |                               |          |       |                       |                      |
| Archer.....                  | 83                            | 36       | 65.0  | 0.65                  |                      |
| Bartow.....                  | 85                            | 43       | 67.0  | 0.58                  |                      |
| Brooksville.....             | 80                            | 47       | 65.6  | 0.73                  |                      |
| Carrabelle.....              | 84                            | 38       | 61.2  | 1.72                  |                      |
| Clermont.....                | 85                            | 48       | 67.8  | 0.40                  |                      |
| Da Keith.....                | 82                            | 34       | 62.4  | 1.37                  |                      |
| De Funiak Springs.....       | 81                            | 34       | 61.4  | 2.68                  |                      |
| Deland.....                  | 83                            | 38       | 65.4  |                       |                      |
| Ernestville.....             | 83                            | 47       | 66.6  | 0.75                  |                      |
| Estero*.....                 | 83                            | 50       | 69.4  |                       |                      |
| Eustis.....                  | 84                            | 47       | 66.8  | 0.35                  |                      |
| Federal Point.....           | 81                            | 43       | 64.3  | 0.32                  |                      |
| Fort Meade.....              | 84                            | 45       | 67.6  | 0.98                  |                      |
| Gainesville.....             | 79                            | 41       | 64.4  | 0.57                  |                      |
| Huntington.....              | 79                            | 43       | 64.2  | 0.55                  |                      |
| Inverness.....               | 85                            | 40       | 65.0  | 0.33                  |                      |
| <i>Florida—Cont'd.</i>       | °                             | °        | °     | Ins.                  | Ins.                 |
| Jasper.....                  | 83                            | 35       | 62.2  | 0.20                  |                      |
| Kissimmee.....               | 85                            | 45       | 68.5  | 0.23                  |                      |
| Lake City.....               | 84                            | 37       | 63.6  | 0.21                  |                      |
| Lemon City.....              | 85                            | 55       | 73.3  | 1.75                  |                      |
| Manatee.....                 | 81                            | 46       | 65.8  | 1.31                  |                      |
| Merritt Island.....          | 84                            | 54       | 70.4  | 0.68                  |                      |
| Myers.....                   | 83                            | 50       | 69.0  | 0.94                  |                      |
| New Smyrna.....              | 83                            | 42       | 65.4  | T.                    |                      |
| Nocatee.....                 | 82                            | 51       | 70.5  | 0.40                  |                      |
| Ocala.....                   | 87                            | 40       | 65.6  | 0.22                  |                      |
| Orange City.....             | 83                            | 50       | 67.5  | 0.55                  |                      |
| Orlando.....                 | 82                            | 47       | 67.2  | 0.12                  |                      |
| Plant City.....              | 86                            | 43       | 66.7  | 0.46                  |                      |
| Rockwell.....                | 80                            | 44       | 64.1  | 0.32                  |                      |
| St. Andrews.....             | 77                            | 40       | 62.4  | 2.07                  |                      |
| St. Francis.....             | 83                            | 39       | 64.4  | 0.36                  |                      |
| St. Francis Barracks.....    | 82                            | 46       | 64.4  | 0.20                  |                      |
| Sebastian.....               | 82                            | 53       | 70.0  | 2.31                  |                      |
| Stephensville*.....          | 83                            | 46       | 62.2  | 0.15                  |                      |
| Switzerland*.....            | 80                            | 43       | 62.0  | 0.14                  |                      |
| Tallahassee.....             | 78                            | 38       | 58.9  | 0.52                  |                      |
| Tarpon Springs.....          | 79                            | 45       | 64.4  | 0.55                  |                      |
| Wausau.....                  | 80                            |          |       | 2.63                  |                      |
| <i>Georgia.</i>              |                               |          |       |                       |                      |
| Adairsville.....             | 72                            | 29       | 52.2  | 3.55                  |                      |
| Albany.....                  | 79                            | 32       | 59.6  | 0.37                  |                      |
| Allentown.....               | 79                            | 32       | 58.7  | 1.52                  |                      |
| Americus.....                | 76                            | 32       | 56.6  | 0.95                  |                      |
| Athens.....                  | 73                            | 32       | 51.4  | 1.35                  |                      |
| Bellville.....               |                               |          |       | 2.00                  |                      |
| Blakely.....                 | 77                            | 34       | 60.1  | 1.73                  |                      |
| Canton.....                  |                               |          |       | 3.40                  |                      |
| Carlton.....                 |                               |          |       | 2.32                  |                      |
| Cedartown.....               | 73                            | 34       | 54.8  | 3.03                  |                      |
| Clayton.....                 | 72                            | 29       | 49.6  | 2.13                  |                      |
| Columbus.....                | 75                            | 39       | 57.4  | 0.90                  |                      |
| Covington.....               | 82                            | 30       | 55.6  | 2.46                  |                      |
| Crescent.....                |                               |          |       | 1.68                  |                      |
| Dahlonega.....               | 75                            | 29       | 51.4  | 2.93                  |                      |
| Diamond.....                 | 76                            |          |       | 3.04                  |                      |
| Dublin.....                  |                               |          |       | 1.72                  |                      |
| Elberton.....                | 75                            | 32       | 56.1  | 2.35                  |                      |
| Fitzgerald.....              | 79                            | 30       | 58.0  | 0.93                  |                      |
| Fleming.....                 | 80                            | 31       | 58.0  | 1.75                  |                      |
| Fort Gaines.....             | 78                            | 32       | 58.0  | 0.98                  |                      |
| Franklin.....                | 74                            | 34       | 55.4  | 2.31                  |                      |
| Gainesville.....             | 73                            | 29       | 51.6  | 2.82                  |                      |
| Gillsville.....              | 78                            | 30       | 54.6  | 2.80                  |                      |
| Greenbush.....               | 73                            | 24       | 50.0  | 4.05                  |                      |
| Harrison.....                |                               |          |       | 1.35                  |                      |
| Hawkinsville.....            | 76                            | 33       | 56.0  | 1.60                  |                      |
| Hephzibah*.....              | 68                            | 40       | 57.6  | 2.00                  |                      |
| Jesup.....                   | 84                            | 29       | 58.8  | 0.75                  |                      |
| Louisville.....              |                               |          |       |                       |                      |

TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.          | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.            | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.            | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|--------------------|-------------------------------|----------|-------|-----------------------|----------------------|----------------------|-------------------------------|----------|-------|-----------------------|----------------------|----------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                    | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                      | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                      | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| Idaho—Cont'd.      |                               |          |       |                       |                      | Illinois—Cont'd.     |                               |          |       |                       |                      | Iowa—Cont'd.         |                               |          |       |                       |                      |
| Priest River.....  | 55                            | 20       | 42.4  | 10.42                 | 2.0                  | Winnebago.....       | 66                            | 24       | 43.4  | 1.52                  | 1.0                  | Centerville.....     | 70                            | 20       | 47.8  | 0.13                  |                      |
| St. Maries.....    | 62                            | 28       | 43.5  | 4.59                  |                      | Indiana.....         | 68                            | 24       | 45.4  | 3.84                  | 3.0                  | Charlton.....        | 73                            | 18       | 46.8  | 1.17                  | T.                   |
| Salubria.....      | 62                            | 22       | 42.3  | 2.40                  | 0.2                  | Anderson.....        | 60                            | 27       | 41.5  | 2.37                  | 10.0                 | Charles City.....    | 62                            | 17       | 42.0  | 1.61                  | T.                   |
| Soldier.....       | 58                            | 14       | 37.2  | 1.16                  | 1.5                  | Auburn.....          | 63                            | 21       | 41.0  | 1.80                  | T.                   | Chillicothe.....     |                               |          |       | 1.60                  | T.                   |
| Swan Valley.....   | 55                            | 15       | 37.0  | 0.55                  |                      | Bedford.....         |                               |          |       | 1.42                  | T.                   | Clarinda.....        | 75                            | 15       | 45.8  | 1.10                  | T.                   |
| Yellow Jacket..... |                               |          |       | 1.02                  |                      | Bloomington.....     | 69                            | 28       | 46.8  | 3.58                  | T.                   | Clinton.....         | 70                            | 19       | 43.1  | 1.05                  | 0.2                  |
| Illinois.          |                               |          |       |                       |                      | Bright.....          | 64                            | 21       | 43.8  | 3.28                  | 3.0                  | College Springs..... | 70                            | 15       | 44.2  | 1.13                  |                      |
| Albion.....        | 73                            | 26       | 48.8  | 3.12                  |                      | Butlerville.....     | 70                            | 24       | 47.1  | 1.61                  | T.                   | Coon Rapids.....     | 64                            | 18       | 44.0  | 1.06                  | T.                   |
| Alexander.....     | 72                            | 23       | 48.6  | 2.31                  | 5.5                  | Cambridge City.....  | 66                            | 21       | 44.7  | 1.81                  | 1.0                  | Cornell.....         | 68                            | 14       | 44.6  | 0.6                   | T.                   |
| Ashton.....        | 65                            | 21       | 42.9  | 0.63                  | 0.4                  | Columbia City.....   | 60                            | 23       | 41.5  | 2.50                  | 7.0                  | Council Bluffs.....  | 70                            | 19       | 46.2  | 1.45                  |                      |
| Astoria.....       | 68                            | 25       | 47.2  | 1.96                  | 3.0                  | Columbus.....        | 72                            | 24       | 46.4  | 3.62                  |                      | Cresco.....          | 63                            | 18       | 39.8  | 1.13                  | 0.8                  |
| Aurora.....        | 65                            | 24       | 43.5  | 1.05                  |                      | Connersville.....    | 68                            | 24       | 45.2  | 1.74                  | T.                   | Cumberland.....      |                               |          |       | 0.22                  | T.                   |
| Aurora.....        | 65                            | 24       | 43.2  | 1.12                  | 2.0                  | Culver.....          | 63                            | 29       | 45.9  | 0.78                  | 7.4                  | Danville.....        |                               |          |       | 1.05                  |                      |
| Bloomington.....   | 69                            | 24       | 46.4  | 1.67                  | 5.0                  | Delphi.....          | 68                            | 22       | 42.7  | 2.78                  | 13.0                 | Decorah.....         | 65                            | 13       | 40.0  | 1.59                  |                      |
| Bushnell.....      | 68                            | 26       | 47.4  | 1.40                  |                      | Edwardsville.....    | 70                            | 31       | 51.3  | 2.44                  | 0.5                  | Delaware.....        | 68                            | 17       | 42.0  | 1.21                  | 1.0                  |
| Cambridge.....     | 67                            | 25       | 45.2  | 1.22                  | 4.5                  | Fairmount.....       | 68                            | 19       | 44.0  | 3.21                  | T.                   | Denison.....         | 65                            | 13       | 41.9  | 1.05                  | T.                   |
| Carlinville.....   | 74                            | 26       | 49.1  | 2.30                  | 5.0                  | Farmland.....        | 66                            | 23       | 43.8  | 1.99                  |                      | Desoto.....          | 68                            | 17       | 44.4  | 1.25                  | 1.0                  |
| Carlyle.....       |                               |          |       | 1.72                  | 1.0                  | Fort Wayne.....      | 65                            | 21       | 42.7  | 2.75                  | 3.0                  | Dows.....            | 65                            | 13       | 42.7  | 1.23                  | 1.0                  |
| Centralia.....     | 80                            | 26       | 50.1  | 1.91                  | 2.3                  | Franklin.....        | 70                            | 29       | 46.1  | 3.07                  | T.                   | Eldon.....           | 75                            | 12       | 47.3  | 0.72                  | T.                   |
| Charleston.....    | 72                            | 27       | 47.6  | 2.98                  | 4.0                  | Greencastle.....     | 67                            | 28       | 46.2  | 3.07                  | 1.2                  | Elkader.....         | 72                            | 15       | 42.6  | 1.29                  |                      |
| Chemung.....       | 65                            | 21       | 41.1  | 2.71                  | 1.5                  | Greensburg.....      | 70                            | 27       | 49.0  | 2.40                  | T.                   | Emerson.....         |                               |          |       | 0.50                  | T.                   |
| Chester.....       |                               |          |       | 1.75                  |                      | Hammond.....         | 60                            | 29       | 45.4  | 2.50                  |                      | Emmetsburg.....      |                               |          |       | 0.57                  |                      |
| Claire.....        | 77                            | 28       | 49.6  | 1.72                  |                      | Hector.....          | 65                            | 23       | 44.2  | 1.93                  | T.                   | Estherville.....     | 64                            | 11       | 35.0  | 0.13                  | T.                   |
| Coatsburg.....     | 72                            | 25       | 48.2  | 2.66                  | 4.0                  | Huntington.....      | 64                            | 25       | 42.6  | 2.85                  | 7.0                  | Fairfield.....       | 72                            | 24       | 47.3  | 1.60                  |                      |
| Cobden.....        | 78                            | 24       | 50.2  | 1.91                  |                      | Jeffersonville.....  | 69                            | 28       | 48.8  | 2.40                  | T.                   | Fayette.....         | 65                            | 13       | 40.5  | 1.29                  | T.                   |
| Danville.....      | 65                            | 21       | 43.0  | 2.46                  | 3.0                  | Knightstown.....     | 65                            | 25       | 44.4  | 2.57                  | 4.0                  | Fonda.....           | 65                            | 16       | 39.2  | 1.91                  | 1.3                  |
| Decatur.....       | 71                            | 23       | 47.3  | 2.01                  | 8.3                  | Kokomo.....          | 66                            | 24       | 45.4  | 2.65                  |                      | Forest City.....     | 67                            | 18       | 43.4  | 1.56                  | 2.0                  |
| Dixon.....         | 66                            | 24       | 44.2  | 0.56                  | 1.0                  | Lafayette.....       | 65                            | 21       | 44.3  | 1.75                  | 5.7                  | Fort Madison.....    |                               |          |       | 1.10                  | T.                   |
| Dwight.....        | 64                            | 24       | 43.1  | 2.03                  | 0.5                  | Laporte.....         | 63                            | 26       | 43.6  | 1.53                  | 4.7                  | Galva.....           | 65                            | 14       | 40.8  | 0.60                  |                      |
| Edinburg.....      | 73                            | 27       | 47.8  | 2.37                  | 2.0                  | Logansport.....      | 65                            | 26       | 42.9  | 1.89                  |                      | Gilman.....          |                               |          |       | 2.03                  |                      |
| Elgin.....         | 65                            | 24       | 42.7  | 1.38                  | 1.4                  | Madison.....         | 71                            | 27       | 48.8  | 2.56                  |                      | Gladbrook.....       |                               |          |       | 2.36                  |                      |
| Equality.....      | 76                            | 29       | 52.1  | 2.32                  | 0.7                  | Marengo.....         | 71                            | 26       | 48.3  | 4.36                  | T.                   | Glenwood.....        | 70                            | 14       | 46.4  | 0.94                  | 0.5                  |
| Flora.....         | 73                            | 27       | 49.0  | 1.71                  | T.                   | Marion.....          | 66                            | 22       | 43.4  | 3.12                  | 3.0                  | Grand Meadow.....    | 60                            | 20       | 39.6  | 1.60                  | 0.2                  |
| Fort Sheridan..... |                               |          |       | 2.40                  | T.                   | Markle.....          | 65                            | 21       | 43.5  | 2.30                  | 6.0                  | Greene.....          | 69                            | 16       | 43.6  | 1.12                  | T.                   |
| Friendgrove.....   | 74                            | 30       | 50.8  | 1.91                  | T.                   | Mauzy.....           | 68                            | 21       | 45.0  | 2.28                  | 4.7                  | Greenfield.....      | 70                            | 15       | 45.0  | 1.04                  | 0.5                  |
| Galva.....         | 68                            | 24       | 45.4  | 1.23                  | 6.8                  | Mount Vernon.....    |                               |          |       | 3.81                  |                      | Grinnell.....        | 70                            | 18       | 44.6  | 2.69                  |                      |
| Glenwood.....      | 62                            | 28       | 41.2  | 1.50                  |                      | Northfield.....      | 65                            | 21       | 42.9  | 2.76                  | T.                   | Grinnell (near)..... | 70                            | 18       | 43.2  | 2.41                  | T.                   |
| Grafton.....       |                               |          |       | 2.17                  |                      | Paoli.....           | 71                            | 26       | 47.6  | 4.41                  | 0.5                  | Griswold.....        |                               |          |       | 0.44                  |                      |
| Grayville.....     | 73                            | 30       | 51.4  | 2.17                  | T.                   | Peru.....            | 70                            | 25       | 46.7  | 2.08                  | 2.0                  | Grundy Center.....   | 67                            | 18       | 41.8  | 2.49                  | T.                   |
| Greenville.....    | 68                            | 26       | 48.4  | 2.13                  | 4.6                  | Prairie Creek.....   | 74                            | 25       | 46.8  | 2.33                  |                      | Guthrie Center.....  | 64                            | 20       | 43.2  | 0.43                  | T.                   |
| Griggsville.....   | 72                            | 25       | 47.5  | 2.16                  | 3.1                  | Princeton.....       | 73                            | 27       | 48.0  | 1.80                  | T.                   | Hampton.....         | 70                            | 20       | 44.0  | 1.03                  | 1.5                  |
| Halfway.....       | 74                            | 28       | 51.8  | 2.07                  | 0.7                  | Richmond.....        | 66                            | 22       | 43.9  | 2.22                  | T.                   | Harlan.....          | 66                            | 12       | 43.0  | 0.91                  | T.                   |
| Halliday.....      | 75                            | 26       | 51.6  | 2.18                  |                      | Rockport.....        | 74                            | 32       | 52.6  | 3.61                  | T.                   | Hawkeye.....         |                               |          |       | 1.56                  |                      |
| Havana.....        | 68                            | 31       | 48.6  | 2.41                  | 5.0                  | Rockville.....       | 69                            | 25       | 45.6  | 3.94                  | 3.0                  | Hedrick.....         | 72                            | 19       | 45.8  | 0.83                  | T.                   |
| Henry.....         | 67                            | 32       | 45.0  | 1.97                  | 1.0                  | Salem.....           | 69                            | 25       | 46.0  | 2.68                  | 2.0                  | Hopewell.....        | 70                            | 18       | 45.4  | 0.67                  | T.                   |
| Hillsboro.....     | 71                            | 27       | 48.2  | 2.45                  | T.                   | Scottdale.....       | 70                            | 28       | 48.7  | 2.70                  | T.                   | Humboldt.....        | 64                            | 14       | 43.0  | 1.67                  | 2.0                  |
| Joliet.....        | 63                            | 26       | 42.9  | 1.15                  | 1.0                  | Shelbyville.....     | 67                            | 28       | 45.8  | 2.59                  | T.                   | Independence.....    | 67                            | 16       | 42.6  | 0.72                  | T.                   |
| Kankakee.....      |                               |          |       | 2.00                  |                      | South Bend.....      | 61                            | 27       | 43.2  | 1.54                  | 8.5                  | Indianola.....       | 71                            | 22       | 46.6  | 1.21                  | T.                   |
| Kishwaukee.....    | 65                            | 25       | 42.8  | 1.12                  | 0.8                  | Syracuse.....        | 61                            | 22       | 41.6  | 2.46                  | 16.0                 | Iowa City.....       | 68                            | 20       | 45.0  | 1.15                  |                      |
| Knoxville.....     | 71                            | 22       | 46.0  | 1.42                  | 6.0                  | Terre Haute.....     | 70                            | 29       | 47.2  | 2.83                  | T.                   | Iowa Falls.....      | 66                            | 17       | 42.1  | 1.00                  | T.                   |
| Lagrange.....      | 65                            | 27       | 42.8  | 1.53                  | T.                   | Topeka.....          | 60                            | 26       | 41.6  | 0.82                  | 6.2                  | Keosauqua.....       | 72                            | 24       | 48.2  | 2.38                  | T.                   |
| Lamar.....         | 71                            | 25       | 47.4  | 1.52                  | 2.5                  | Valparaiso.....      | 64                            | 28       | 44.4  | 0.85                  | 3.5                  | Knoxville.....       | 73                            | 20       | 45.1  | 0.82                  | T.                   |
| Lanark.....        | 65                            | 15       | 41.8  | 1.73                  | 3.0                  | Veederburg.....      | 65                            | 24       | 45.0  | 1.79                  | T.                   | Lacona.....          |                               |          |       | 1.08                  |                      |
| Loami.....         |                               |          |       | 1.88                  | 7.0                  | Vevay.....           | 75                            | 28       | 47.2  | 2.95                  | 1.0                  | Lamoni.....          | 70                            | 20       | 46.5  | 0.63                  | T.                   |
| McLeansboro.....   | 76                            | 28       | 49.6  | 2.48                  |                      | Winamac.....         | 65                            | 19       | 43.2  | 2.01                  | 13.5                 | Lansing.....         | 69                            | 17       | 44.2  | 1.75                  | T.                   |
| Martinsville.....  | 71                            | 26       | 47.1  | 1.79                  | T.                   | Worthington.....     | 71                            | 27       | 47.4  | 2.14                  | 1.2                  | Larchwood.....       |                               |          |       | 0.67                  | T.                   |
| Martinton.....     | 68                            | 22       | 43.8  | 1.84                  | 6.0                  | Indian Territory.    |                               |          |       |                       |                      | Larrabee.....        | 67                            | 13       | 41.8  | 0.97                  | 2.5                  |
| Mascoutah.....     | 74                            | 31       | 47.9  | 3.50                  | T.                   | Hartshorne.....      | 81                            | 22       | 56.6  | 4.30                  |                      | Leclaire.....        |                               |          |       | 0.88                  | T.                   |
| Mattoon.....       | 74                            | 30       | 50.1  | 2.08                  | 1.0                  | Healdton.....        | 81                            | 20       | 54.4  | 5.02                  |                      | Lemars.....          | 66                            | 11       | 42.4  | 1.81                  | T.                   |
| Minonk.....        | 69                            | 25       | 44.8  | 0.95                  | 3.0                  | Lehigh.....          | 81                            | 24       | 55.6  | 5.78                  |                      | Logan.....           | 68                            | 17       | 45.6  | 0.41                  | T.                   |
| Monmouth.....      | 71                            | 23       | 46.1  | 0.65                  | 3.0                  | Muscooke.....        | 84                            | 22       | 54.0  | 3.35                  |                      | Maple Valley.....    |                               |          |       | 1.15                  |                      |
| Monticello.....    | 67                            | 28       | 47.0  | 2.01                  | 10.0                 | Ryan.....            | 86                            | 33       | 57.0  | 3.43                  |                      | Maquoketa.....       | 71                            | 19       | 44.5  | 1.26                  |                      |
| Morgan Park.....   | 68                            | 25       | 44.6  | 1.83                  |                      | Sapulpa.....         | 82                            | 22       | 54.0  | 2.40                  |                      | Marshalltown.....    | 70                            | 17       | 45.2  | 1.81                  |                      |
| Morrisonville..... | 70                            | 26       | 47.4  | 2.11                  | 4.5                  | South McAlester..... |                               |          |       | 3.91                  |                      | Melrose.....         |                               |          |       | 0.15                  |                      |
| Mount Carmel.....  |                               |          |       | 1.82                  | T.                   | Tablequah.....       | 77                            | 20       | 52.0  | 5.80                  |                      | Monticello.....      | 72                            | 15       | 44.4  | 1.60                  | 0.5                  |
| Mount Pulaski..... | 69                            | 22       | 47.2  | 1.97                  | 12.0                 | Tulsa.....           |                               |          |       | 1.47                  |                      | Moor.....            | 76                            | 24       | 47.4  | 1.02                  |                      |
| Mount Vernon.....  | 73                            | 21       | 45.8  | 1.30                  | T.                   | Wagoner.....         | 81                            | 20       | 54.6  | 2.84                  |                      | Mountain.....        | 69                            | 19       | 46.0  | 0.52                  | T.                   |
| New Burnside.....  | 76                            | 26       | 52.4  | 1.86                  | 0.2                  | Webbers Falls.....   |                               |          |       | 3.42                  |                      | Mount Pleasant.....  | 74                            | 23       | 45.6  | 2.11                  |                      |
| Ottawa.....        | 67                            | 25       | 44.9  | 1.46                  | T.                   | Iowa.                |                               |          |       |                       |                      | Mount Vernon.....    | 69                            | 21       | 44.9  | 1.47                  |                      |
| Palestine.....     | 70                            | 27       | 45.6  | 2.13                  | T.                   | Afton.....           | 67                            | 18       | 44.0  | 0.45                  | T.                   | Mount Vernon.....    | 73                            | 20       | 45.6  | 1.50                  | 0.5                  |
| Pana.....          | 71                            | 25       | 47.4  | 1.72                  | 2.5                  | Albia.....           | 75                            | 18       | 46.4  | 0.85                  | T.                   | Murray.....          |                               |          |       | 0.88                  | T.                   |
| Paris.....         | 70                            | 26       | 45.2  | 3.59                  | 4.0                  |                      |                               |          |       |                       |                      |                      |                               |          |       |                       |                      |



| Stations.           | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.            | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.            | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|---------------------|-------------------------------|----------|-------|-----------------------|----------------------|----------------------|-------------------------------|----------|-------|-----------------------|----------------------|----------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                     | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                      | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                      | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| <i>Iowa—Cont'd.</i> |                               |          |       |                       |                      | <i>Kentucky.</i>     |                               |          |       |                       |                      | <i>Maine—Cont'd.</i> |                               |          |       |                       |                      |
| Sibley              | 65                            | 12       | 40.8  | 0.67                  | 0.2                  | Alpha * <sup>s</sup> | 31                            | 49.8     | 0.88  | T.                    | Northfield           | 53                   | 12                            | 31.8     | 2.19  | 4.0                   |                      |
| Sigourney           | 74                            | 20       | 47.0  | 1.00                  | T.                   | Barstow              | 75                            | 52       | 49.4  | 1.79                  | North Bridgton       | 61                   | 14                            | 35.8     | 2.46  | 5.5                   |                      |
| Sioux Center        | 63                            | 11       | 42.2  | 0.66                  | T.                   | Blandville           | 74                            | 56       | 51.9  | 3.27                  | Orono                | 58                   | 8                             | 34.0     | 2.01  | 7.8                   |                      |
| Spirit Lake         | 65                            | 18       | 41.8  | 0.32                  | T.                   | Bowling Green        | 75                            | 58       | 51.5  | 1.83                  | Rumford Falls        | 54                   | 10                            | 33.4     | 1.94  | 8.8                   |                      |
| Storm Lake          | 64                            | 17       | 42.6  | 1.10                  | 0.8                  | Burnside             | 77                            | 30       | 53.0  | 2.12                  | Winslow              |                      |                               |          | 1.76  |                       |                      |
| Stuart              | 65                            | 20       | 43.4  | 1.32                  | 1.2                  | Canton *             | 70                            | 26       | 46.5  | 3.24                  | <i>Maryland.</i>     |                      |                               |          |       |                       |                      |
| Thurman             | 68                            | 15       | 45.2  | 0.96                  | T.                   | Carrollton           | 71                            | 32       | 45.7  | 1.71                  | Annapolis            | 71                   | 29                            | 48.0     | 2.80  |                       |                      |
| Toledo              | 71                            | 16       | 45.6  | 2.47                  |                      | Catlettsburg         | 76                            | 30       | 52.4  | 3.00                  | Bachmans Valley      | 67                   | 19                            | 41.2     | 3.65  |                       |                      |
| Villisca            | 70                            | 17       | 43.8  | 0.75                  | T.                   | Edmonton             | 70                            | 23       | 50.8  | 1.68                  | Boethersville        | 68                   | 20                            | 44.2     | 1.19  |                       |                      |
| Vinton              | 74                            | 21       | 49.0  | 1.06                  |                      | Eubank               | 72                            | 32       | 48.1  | 1.72                  | Boonsboro a          | 71                   | 23                            | 44.0     | 1.24  |                       |                      |
| Wapello             | 73                            | 16       | 45.0  | 0.74                  |                      | Falmouth             | 78                            | 25       | 51.0  | 2.12                  | Cambridge            | 71                   | 30                            | 49.7     | 1.05  |                       |                      |
| Washington          | 68                            | 16       | 43.4  | 1.38                  | T.                   | Fords Ferry          | 69                            | 30       | 51.0  | 1.20                  | Charlotte Hall       | 73                   | 22                            | 45.6     | 1.41  |                       |                      |
| Washta              | 66                            | 19       | 43.2  | 1.37                  | T.                   | Frankfort            | 70                            | 30       | 48.0  |                       | Chase                | 67                   | 18                            | 43.2     | 2.98  |                       |                      |
| Waterloo            | 62                            | 13       | 40.8  | 1.35                  | T.                   | Georgetown           | 76                            | 21       | 48.7  | 1.94                  | Chestertown          | 64                   | 27                            | 44.8     | 0.71  |                       |                      |
| Waverly             | 68                            | 16       | 43.4  | 1.38                  | T.                   | Greensburg           | 72                            | 30       | 50.4  | 3.97                  | Chewsville           | 69                   | 21                            | 43.3     | 2.46  |                       |                      |
| Westbend *          | 62                            | 13       | 40.8  | 1.35                  | T.                   | Henderson            | 74                            | 24       | 51.4  | 1.71                  | Coleman              | 69                   | 30                            | 47.0     | 2.28  |                       |                      |
| West Union          | 68                            | 22       | 40.7  | 1.18                  | T.                   | Hopkinsville         | 73                            | 29       | 49.6  | 1.65                  | Collegepark          | 70                   | 20                            | 44.1     | 2.95  |                       |                      |
| Whitten *           | 63                            | 22       | 44.5  | 1.82                  |                      | Irvington            | 74                            | 24       | 49.7  | 1.37                  | Cumberland           | 66                   | 31                            | 48.4     | 2.15  |                       |                      |
| Wilton Junction     | 69                            | 18       | 45.4  | 0.82                  |                      | Jackson              | 76                            | 24       | 49.5  | 2.75                  | Darlington           | 67                   | 24                            | 44.2     | 2.06  |                       |                      |
| Winterset           |                               |          |       | 0.83                  | 0.5                  | Leitchfield          | 75                            |          |       | 2.46                  | Deerpark             | 63                   | 13                            | 39.7     | 0.89  | 0.5                   |                      |
| Woodburn            |                               |          |       |                       |                      | Loretto              | 72                            | 21       | 48.4  | 1.84                  | Easton               | 67                   | 25                            | 44.8     | 2.67  |                       |                      |
| <i>Kansas.</i>      |                               |          |       |                       |                      | Marrowbone           | 73                            | 26       | 46.6  | 1.78                  | Ellicott City        | 71                   | 24                            | 45.0     | 2.71  |                       |                      |
| Abilene             | 75                            | 19       | 48.4  | 0.70                  |                      | Maysville            | 72                            | 28       | 50.4  | 1.96                  | Fallston             | 66                   | 28                            | 44.0     | 3.35  |                       |                      |
| Achilles            |                               |          |       | 1.55                  |                      | Mount Hermon         | 67                            | 29       | 47.9  | 1.71                  | Frederick            | 70                   | 25                            | 44.8     | 1.33  |                       |                      |
| Altonto *           | 75                            | 21       | 46.6  | 1.47                  |                      | Mount Sterling       | 73                            | 30       | 50.5  | 3.66                  | Frostburg            | 66                   |                               |          | 3.22  |                       |                      |
| Anthony             |                               |          |       | 1.37                  | T.                   | Owensboro            | 72                            | 28       | 49.0  | 3.19                  | Grantsville          | 63                   | 17                            | 41.2     | 2.13  |                       |                      |
| Atchison a          | 77                            | 21       | 49.4  | 0.80                  |                      | Owenton              | 70                            | 26       | 51.2  | 2.97                  | Greatfalls           | 70                   | 25                            | 43.5     | 2.73  |                       |                      |
| Augusta             | 76                            | 23       | 50.2  | 0.80                  |                      | Paducah a            | 78                            | 28       | 53.0  | 2.15                  | Greenspring Furnace  | 68                   | 23                            | 42.9     | 1.87  |                       |                      |
| Beloit              | 72                            | 17       | 45.6  | 0.43                  |                      | Paducah b            | 70                            | 26       | 51.2  | 2.97                  | Hagerstown           | 70                   | 21                            | 44.4     | 2.56  | T.                    |                      |
| Burlington          | 77                            | 17       | 49.1  | 1.71                  |                      |                      |                               |          |       |                       |                      |                      |                               |          |       |                       |                      |

TABLE II.—Climatological record of voluntary and other cooperating observers.—Continued.

| Stations.                    | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|------------------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                              | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| <b>Massachusetts—Cont'd.</b> | °                             | °        | °     | Ins.                  | Ins.                 |
| Winchendon.....              | 61                            | 21       | 39.2  | 2.35                  | 0.5                  |
| Worcester.....               | 61                            | 21       | 39.2  | 2.60                  | 1.0                  |
| <b>Michigan.</b>             |                               |          |       |                       |                      |
| Adrian.....                  | 60                            | 22       | 40.8  | 1.85                  | 0.5                  |
| Agricultural College.....    | 60                            | 23       | 39.7  | 1.72                  | 3.0                  |
| Alma.....                    | 59                            | 21       | 40.1  | 1.39                  | T.                   |
| Ann Arbor.....               | 63                            | 24       | 41.2  | 1.99                  | 1.0                  |
| Arbela.....                  | 66                            | 22       | 43.8  | 1.45                  | 0.0                  |
| Baldwin.....                 | 65                            | 23       | 44.0  | 1.10                  |                      |
| Ball Mountain.....           | 65                            | 26       | 41.5  | 2.79                  | 1.0                  |
| Baraga.....                  | 67                            | 20       | 43.4  | 0.02                  |                      |
| Battle Creek.....            | 59                            | 26       | 40.5  | 1.40                  | 1.4                  |
| Bay City.....                | 60                            | 26       | 41.2  | 1.76                  |                      |
| Berlin.....                  | 64                            | 23       | 39.9  | 2.48                  | 1.5                  |
| Berrien Springs.....         | 63                            | 25       | 43.0  | 1.50                  | 2.5                  |
| Big Rapids.....              | 59                            | 30       | 38.9  | 0.89                  | T.                   |
| Birmingham.....              | 63                            | 23       | 40.6  | 2.46                  |                      |
| Boon.....                    | 57                            | 18       | 37.7  | 0.96                  | 1.1                  |
| Calumet.....                 | 63                            | 25       | 39.8  | 0.67                  | 1.0                  |
| Carsonville.....             | 60                            | 24       | 41.5  | 1.77                  | 1.0                  |
| Charlevoix.....              | 58                            | 25       | 41.2  | 1.34                  |                      |
| Cheboygan.....               | 63                            | 21       | 40.2  | 0.58                  | T.                   |
| Clinton.....                 | 66                            | 21       | 42.4  | 2.06                  | T.                   |
| Coldwater.....               | 60                            | 22       | 40.9  | 1.74                  | 6.0                  |
| Eagle Harbor.....            | 67                            | 26       | 41.2  | 0.42                  | 0.7                  |
| East Tawas.....              | 59                            | 24       | 39.4  | 0.50                  |                      |
| Eloise.....                  | 60                            | 25       | 42.0  | 1.23                  | T.                   |
| Fairview.....                | 60                            | 24       | 41.4  | 1.19                  | 4.0                  |
| Fitchburg.....               | 59                            | 23       | 40.1  | 1.60                  | 5.0                  |
| Flint.....                   | 61                            | 24       | 40.5  | 1.86                  |                      |
| Frankfort.....               | 53                            | 30       | 39.2  |                       |                      |
| Gladwin.....                 | 60                            | 30       | 39.4  | 0.35                  | 0.5                  |
| Grand Rapids.....            | 68                            | 27       | 43.6  | 1.81                  | 1.5                  |
| Grape.....                   | 60                            | 25       | 42.2  | 1.93                  |                      |
| Grayling.....                | 62                            | 22       | 40.8  | 0.20                  | 0.5                  |
| Hanover.....                 | 59                            | 30       | 40.4  | 1.19                  | 9.5                  |
| Harbor Beach.....            | 59                            | 24       | 41.7  | 1.63                  | 0.5                  |
| Harrison.....                | 60                            | 25       | 40.6  | 1.92                  | 0.5                  |
| Harrisville.....             | 59                            | 25       | 40.6  | 0.57                  | 0.3                  |
| Hart.....                    | 59                            | 25       | 42.2  | 1.20                  |                      |
| Hastings.....                | 60                            | 22       | 40.0  | 1.76                  | 2.0                  |
| Hayes.....                   | 60                            | 20       | 40.4  | 0.75                  | T.                   |
| Hilledale.....               | 59                            | 22       | 40.0  | 2.01                  | 4.0                  |
| Holland.....                 | 58                            | 32       | 44.1  |                       |                      |
| Howell.....                  | 65                            | 20       | 40.0  | 0.90                  |                      |
| Humboldt.....                | 58                            | 13       | 34.9  | 0.14                  | T.                   |
| Ionia.....                   | 60                            | 22       | 41.0  | 1.15                  | T.                   |
| Iron Mountain.....           | 64                            | 15       | 39.0  | 0.10                  | T.                   |
| Iron River.....              | 63                            | 11       | 37.9  | 0.07                  | T.                   |
| Ishpeming.....               | 59                            | 17       | 37.6  | 0.47                  | 0.8                  |
| Ivan.....                    | 60                            | 21       | 38.6  | 0.53                  | T.                   |
| Jackson.....                 | 61                            | 25       | 41.2  | 1.64                  | 2.2                  |
| Jeddo.....                   | 62                            | 26       | 40.0  | 1.80                  |                      |
| Kalamazoo.....               | 60                            | 27       | 41.8  | 2.02                  | T.                   |
| Lake City.....               | 58                            | 19       | 35.6  |                       |                      |
| Lansing.....                 | 61                            | 29       | 41.1  | 1.86                  | 4.2                  |
| Lapeer.....                  | 63                            | 25       | 41.8  | 1.93                  | T.                   |
| Lathrop.....                 | 58                            | 16       | 38.0  | 0.06                  | T.                   |
| Lincoln.....                 | 59                            | 23       | 39.2  | 0.05                  |                      |
| Ludington.....               | 58                            | 24       | 41.4  | 0.54                  |                      |
| Luzerne.....                 | 60                            | 16       | 37.6  | 0.61                  | T.                   |
| MacKinnaw.....               | 58                            | 24       | 40.4  | 0.70                  |                      |
| Madison.....                 | 60                            | 23       | 41.2  | 1.99                  | 1.5                  |
| Mancelona.....               | 62                            | 17       | 40.0  | 0.35                  | T.                   |
| Manistee.....                | 56                            | 25       | 41.5  | 0.54                  |                      |
| Manistiquie.....             | 52                            | 19       | 39.6  | 0.50                  |                      |
| Menominee.....               | 62                            | 26       | 41.8  | 0.50                  |                      |
| Middle Island.....           | 54                            | 30       | 41.6  |                       |                      |
| Mottville.....               | 62                            | 20       | 40.3  | 1.56                  | 5.0                  |
| Mount Clemens.....           | 62                            | 23       | 41.0  | 2.50                  |                      |
| Mount Pleasant.....          | 62                            | 21       | 40.4  | 0.79                  |                      |
| Muskegon.....                | 60                            | 25       | 42.2  | 1.26                  | T.                   |
| Newberry.....                | 58                            | 18       | 36.2  | 0.10                  |                      |
| North Manitou Island.....    | 65                            | 30       | 43.6  |                       |                      |
| Northport.....               | 59                            | 27       | 41.6  | 0.71                  | T.                   |
| Old Mission.....             | 60                            | 27       | 42.2  | 0.73                  |                      |
| Olivet.....                  | 59                            | 28       | 40.4  | 1.37                  | 3.0                  |
| Ovid.....                    | 60                            | 25       | 41.0  | 1.94                  | 4.0                  |
| Owosso.....                  | 62                            | 24       | 41.2  | 1.72                  |                      |
| Petoskey.....                | 55                            | 23       | 40.0  | 0.93                  | T.                   |
| Plymouth.....                | 60                            | 24       | 41.4  | 2.53                  | T.                   |
| Port Austin.....             | 58                            | 30       | 41.3  | 1.00                  |                      |
| Reed City.....               | 61                            | 25       | 40.0  | 0.31                  | T.                   |
| Rogers.....                  | 61                            | 15       | 39.0  | 1.42                  | 1.0                  |
| Romeo.....                   | 64                            | 29       | 41.8  | 1.30                  |                      |
| Saginaw.....                 | 61                            | 25       | 41.8  | 1.70                  | 0.5                  |
| St. Ignace.....              | 68                            | 21       | 43.4  | 0.98                  | T.                   |
| St. Johns.....               | 59                            | 24       | 41.2  | 1.72                  | 2.2                  |
| St. Joseph.....              | 60                            | 29       | 43.4  | 1.92                  | T.                   |
| Sidnaw.....                  | 60                            | 14       | 37.2  | 0.30                  | 2.0                  |
| Somerset.....                | 58                            | 24       | 39.2  | 2.01                  | 12.0                 |
| South Haven.....             | 59                            | 30       | 43.6  | 1.52                  | T.                   |
| Stanton.....                 | 62                            | 22       | 39.2  |                       |                      |
| Thornville.....              | 63                            | 28       | 41.9  | 1.40                  | 1.0                  |
| Traverse City.....           | 62                            | 28       | 43.0  | 0.66                  |                      |
| Vandalla.....                | 61                            | 27       | 41.4  | 1.89                  | 8.9                  |
| <b>Michigan—Cont'd.</b>      |                               |          |       |                       |                      |
| Vassar.....                  | 67                            | 22       | 41.5  |                       |                      |
| Vermilion.....               | 53                            | 16       | 36.3  |                       |                      |
| Wasepi.....                  | 60                            | 25       | 41.6  | 1.63                  |                      |
| Waverly.....                 | 58                            | 23       | 40.5  | 1.87                  | 0.3                  |
| Wetmore.....                 | 60                            | 13       | 38.6  | 0.38                  |                      |
| Whitecloud.....              | 60                            | 19       | 40.5  | 0.17                  | 0.2                  |
| Ypsilanti.....               | 58                            | 24       | 41.0  | 1.67                  |                      |
| <b>Minnesota.</b>            |                               |          |       |                       |                      |
| Ada.....                     | 65                            | 10       | 35.8  | 0.76                  | 0.2                  |
| Albert Lea.....              | 66                            | 21       | 41.2  | 1.05                  | T.                   |
| Alexandria.....              | 61                            | 18       | 38.9  | 0.73                  | 0.8                  |
| Ashby.....                   | 59                            | 18       | 39.0  | 0.69                  | 0.2                  |
| Beardsley.....               | 67                            | 22       | 39.1  | 0.65                  | 1.5                  |
| Bird Island.....             | 64                            | 15       | 40.6  | 0.64                  | 2.5                  |
| Blooming Prairie.....        | 60                            | 19       | 39.4  | 0.75                  | 0.5                  |
| Brainerd.....                | 59                            | 19       | 38.2  | 0.16                  |                      |
| Caledonia.....               | 63                            | 18       | 39.9  | 1.42                  | T.                   |
| Camden.....                  | 72                            | 20       | 44.6  | 0.68                  | T.                   |
| Collegeville.....            | 60                            | 24       | 41.0  | 0.73                  | 0.7                  |
| Crookston.....               | 59                            | 10       | 35.8  | 0.44                  | T.                   |
| Deephaven.....               | 62                            | 9        | 36.1  | 0.55                  | T.                   |
| Detroit City.....            | 62                            | 18       | 40.2  | 0.42                  |                      |
| Faribault.....               | 62                            | 17       | 39.2  | 0.64                  | 0.2                  |
| Farmington.....              | 67                            | 15       | 38.2  | 0.60                  | 0.3                  |
| Fergus Falls.....            | 64                            | 14       | 38.0  | 0.51                  |                      |
| Glencoe.....                 | 62                            | 10       | 39.7  | 0.46                  | 1.0                  |
| Grand Meadow.....            | 65                            | 10       | 34.6  | 0.36                  | 2.0                  |
| Hallock.....                 | 63                            | 20       | 40.2  | 1.14                  | T.                   |
| Lake City.....               | 67                            | 19       | 40.9  | 0.43                  |                      |
| Lake Jennie.....             | 61                            | 17       | 39.2  | 0.45                  | 1.5                  |
| Lake Winnibigoshish.....     | 63                            | 17       | 37.6  | 0.18                  |                      |
| Leech.....                   | 66                            | 13       | 36.8  | 0.27                  |                      |
| Leroy.....                   | 64                            | 20       | 41.8  | 0.68                  | T.                   |
| Long Prairie.....            | 59                            | 12       | 36.4  | 0.73                  | T.                   |
| Luverne.....                 | 78                            | 15       | 42.0  | 0.87                  | T.                   |
| Lynd.....                    | 66                            | 15       | 40.4  | 0.44                  | 1.0                  |
| Maple Plain.....             | 62                            | 30       | 39.2  | 0.42                  | 1.1                  |
| Millaca.....                 | 61                            | 16       | 38.0  | 0.20                  |                      |
| Milan.....                   | 67                            | 13       | 40.0  | 1.30                  | 2.0                  |
| Minneapolis.....             | 60                            | 18       | 39.0  | 0.38                  | 0.5                  |
| Minneapolis.....             | 62                            | 15       | 38.5  | 0.88                  | 1.0                  |
| Minnesota City.....          | 62                            | 30       | 40.2  | 0.47                  | T.                   |
| Montevideo.....              | 62                            | 14       | 39.4  | 1.34                  | 1.8                  |
| Morris.....                  | 63                            | 16       | 39.6  | 1.33                  | 4.0                  |
| Mount Iron.....              | 59                            | 11       | 34.2  | 0.86                  | T.                   |
| Newfolden.....               | 55                            | 12       | 34.3  | 0.48                  | 0.2                  |
| New London.....              | 65                            | 17       | 39.0  | 1.48                  | 2.0                  |
| New Richland.....            | 62                            | 24       | 41.1  |                       |                      |
| New Ulm.....                 | 64                            | 17       | 40.2  | 0.21                  | 2.5                  |
| Park Rapids.....             | 59                            | 13       | 36.0  | 0.52                  | 0.4                  |
| Pine River.....              | 61                            | 16       | 37.8  | 0.25                  | T.                   |
| Pipestone.....               | 61                            | 20       | 42.4  | 0.69                  |                      |
| Pleasant Mounds.....         | 67                            | 19       | 42.2  | 0.23                  | T.                   |
| Pokegama Falls.....          | 62                            | 10       | 35.4  | 0.47                  | 0.4                  |
| Redwing.....                 | 61                            | 18       | 40.4  |                       |                      |
| Reeds.....                   | 61                            | 12       | 34.9  | 0.91                  | 3.2                  |
| Rolling Green.....           | 65                            | 15       | 40.6  | 0.56                  | 0.5                  |
| Roseau.....                  | 63                            | 22       | 39.5  | 1.10                  | T.                   |
| St. Charles.....             | 62                            | 21       | 41.8  | 0.88                  | 1.0                  |
| St. Cloud.....               | 60                            | 18       | 38.0  | 0.57                  |                      |
| St. Peter.....               | 61                            | 16       | 39.4  | 0.32                  | 0.5                  |
| Sandy Lake Dam.....          | 60                            | 15       | 34.6  | 0.60                  | 1.0                  |
| Shakopee.....                | 67                            | 19       | 41.2  | 0.82                  | T.                   |
| Tower.....                   | 58                            | 20       | 39.7  | 0.88                  | T.                   |
| Two Harbors.....             | 63                            | 19       | 38.2  | 2.55                  | T.                   |
| Wabasha.....                 | 61                            | 11       |       | 0.58                  | 0.1                  |
| Willmar.....                 | 65                            | 19       | 42.4  | 0.05                  |                      |
| Willow River.....            | 62                            | 17       | 42.6  | 0.47                  | T.                   |
| Winnebago City.....          | 60                            | 19       | 40.3  |                       |                      |
| Worthington.....             | 60                            | 19       | 40.3  |                       |                      |
| Zumbrota.....                | 60                            | 19       | 40.3  |                       |                      |
| <b>Mississippi.</b>          |                               |          |       |                       |                      |
| Aberdeen.....                | 76                            | 27       | 52.6  | 2.75                  |                      |
| Agricultural College.....    | 78                            | 29       | 57.2  | 3.91                  |                      |
| Americus.....                | 87                            | 29       | 61.5  | 5.82                  |                      |
| Austin.....                  | 77                            | 22       | 54.4  | 3.78                  |                      |
| Batesville.....              | 77                            | 22       | 51.8  | 1.28                  |                      |
| Bay St. Louis.....           | 79                            | 35       | 59.8  | 2.01                  |                      |
| Biola.....                   | 83                            | 29       | 60.0  | 8.28                  |                      |
| Booneville.....              | 79                            | 26       | 53.3  | 2.76                  |                      |
| Brookhaven.....              | 85                            | 22       | 57.8  | 1.95                  |                      |
| Canton.....                  | 82                            | 22       | 57.0  | 1.95                  |                      |
| Columbus.....                | 78                            | 28       | 54.9  | 5.69                  |                      |
| Columbus.....                | 75                            | 27       | 51.2  | 2.95                  |                      |
| Corinth.....                 | 84                            | 26       | 58.2  | 2.80                  |                      |
| Crystall Springs.....        | 79                            | 27       | 57.4  | 1.87                  |                      |
| Edwards.....                 | 81                            | 26       | 57.8  | 2.10                  |                      |
| Fayette.....                 | 77                            | 32       | 55.6  | 1.06                  |                      |
| Greenville.....              | 81                            | 30       | 56.8  | 0.94                  |                      |
| Greenville.....              | 79                            | 29       | 58.4  |                       |                      |
| Hattiesburg.....             | 80                            | 28       | 57.9  | 1.87                  |                      |
| Hernando.....                | 76                            | 30       | 54.5  | 1.90                  |                      |
| Jackson.....                 | 81                            | 27       | 54.3  | 2.79                  |                      |
| Kosciusko.....               | 82                            | 22       | 56.9  | 2.15                  |                      |
| <b>Mississippi—Cont'd.</b>   |                               |          |       |                       |                      |
| Lake.....                    | 77                            | 22       | 54.8  | 1.06                  |                      |
| Logtown.....                 | 81                            | 29       | 60.1  | 1.57                  |                      |
| Louisville.....              | 81                            | 24       | 55.0  | 4.40                  |                      |
| Macon.....                   | 81                            | 27       | 55.0  | 3.93                  |                      |
| Magnolia.....                | 82                            | 25       | 58.3  | 2.14                  |                      |
| Natchez.....                 | 86                            | 24       | 60.4  | 2.55                  |                      |
| Okolona.....                 | 80                            | 24       | 55.4  | 2.00                  |                      |
| Palo Alto.....               | 78                            | 25       | 57.0  | 1.64                  |                      |
| Pontotoc.....                | 78                            | 21       | 55.7  | 1.93                  |                      |
| Port Gibson.....             | 81                            | 23       | 56.8  | 1.62                  |                      |
| Ripley.....                  | 76                            | 22       | 53.0  | 2.71                  |                      |
| Stonington.....              | 80                            | 28       | 57.9  |                       |                      |
| Thornton.....                |                               |          |       | 2.30                  |                      |
| Tupelo.....                  |                               |          |       | 3.19                  |                      |
| University.....              | 77                            | 20       | 55.4  | 2.30                  |                      |
| Wainutgrove.....             | 82                            | 22       | 59.0  | 1.45                  |                      |
| Waterville.....              | 79                            | 25       | 55.4  | 3.55                  |                      |
| Waynesboro.....              | 80                            | 28       | 57.2  | 2.22                  |                      |
| Woodville.....               | 80                            | 29       | 58.8  | 2.60                  |                      |
| Yazoo City.....              | 82                            | 24       | 55.9  | 1.18                  |                      |
| <b>Missouri.</b>             |                               |          |       |                       |                      |
| Appleton City.....           | 78                            | 24       | 50.6  | 1.04                  | T.                   |
| Arthur.....                  | 77                            | 21       | 45.8  | 2.69                  |                      |
| Avalon.....                  | 75                            | 20       | 49.4  | 1.12                  | T.                   |
| Bethany.....                 | 72                            | 16       | 47.4  | 2.22                  |                      |
| Birchtree.....               | 75                            | 19       | 50.6  | 3.08                  | T.                   |
| Boonville.....               |                               |          |       | 1.35                  |                      |
| Brunswick.....               | 76                            | 20       | 48.4  | 0.96                  |                      |
| Carrollton.....              | 74                            | 22       | 50.7  | 0.94                  |                      |
| Conception.....              | 79                            | 22       | 48.2  | 1.25                  | T.                   |
| Cook Station.....            | 77                            | 18       | 50.5  | 2.25                  | 0.1                  |
| Cowgill.....                 | 74                            | 20       | 49.0  | 1.19                  | T.                   |
| Darksville.....              | 74                            | 23       | 47.8  | 1.34                  | T.                   |
| Downing.....                 |                               |          |       | 0.74                  |                      |
| East Lynne.....              | 74                            | 24       | 47.2  | 1.15                  |                      |
| Edgehill.....                | 68                            | 20       | 46.8  | 3.10                  | 3.0                  |
| Edwards.....                 | 78                            | 19       | 50.0  | 1.90                  | T.                   |
| Eightmile.....               | 76                            | 24       | 48.9  | 1.46                  | T.                   |
| Elida.....                   | 78                            | 21       | 50.5  | 1.48                  |                      |
| Elmira.....                  | 73                            |          |       | 0.81                  | T.                   |
| Fairport.....                |                               |          |       | 1.04                  |                      |
| Fayette.....                 | 75                            | 23       | 48.7  | 0.77                  |                      |
| Fulton.....                  |                               |          |       | 2.30                  | T.                   |
| Galena.....                  |                               |          |       | 3.13                  | T.                   |
| Gallatin.....                | 74                            | 21       | 49.4  |                       |                      |



TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.                 | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.                 | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.                      | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|---------------------------|-------------------------------|----------|-------|-----------------------|----------------------|---------------------------|-------------------------------|----------|-------|-----------------------|----------------------|--------------------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                           | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                           | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                                | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| Missouri—Cont'd.          |                               |          |       |                       |                      | Nebraska—Cont'd.          |                               |          |       |                       |                      | Nebraska—Cont'd.               |                               |          |       |                       |                      |
| Sarcoixle * <sup>3</sup>  | 74                            | 30       | 45.2  | 1.86                  |                      | Fairmont                  | 73                            | 15       | 45.0  | 1.15                  |                      | Wisner                         | 66                            | 14       | 41.5  | 1.10                  | T.                   |
| Sedalia                   | 73                            | 20       | 46.6  | 4.11                  |                      | Fort Robinson             | 74                            | 14       | 42.2  | 0.25                  |                      | Wymore * <sup>1</sup>          | 66                            | 14       | 41.5  | 0.85                  |                      |
| Seymour                   | 73                            | 20       | 46.6  | 4.11                  |                      | Freemont                  | 70                            | 12       | 44.6  | 1.28                  |                      | York * <sup>1</sup>            | 69                            | 16       | 43.5  | 1.00                  | T.                   |
| Shelbina                  | 76                            | 24       | 52.2  | 4.43                  |                      | Geneva                    | 69                            | 15       | 44.2  | 1.13                  |                      | Nevada.                        |                               |          |       |                       |                      |
| Sikeston                  | 76                            | 24       | 52.2  | 4.43                  |                      | Genoa                     | 70                            | 15       | 44.2  | 0.71                  |                      | Battle Mountain * <sup>1</sup> | 65                            | 20       | 38.7  | 0.00                  |                      |
| Steffenville              | 73                            | 25       | 49.4  | 1.50                  | 0.5                  | Gering                    | 67                            | 10       | 38.4  | 0.10                  |                      | Beowawe * <sup>1</sup>         | 60                            | 22       | 41.9  | T.                    |                      |
| Stellada                  | 75                            | 20       | 50.0  | 0.69                  |                      | Gordon                    | 70                            | 15       | 44.2  | 0.30                  |                      | Candelaria                     | 71                            | 22       | 47.0  | T.                    | T.                   |
| Sublett                   | 73                            | 20       | 49.0  | 1.05                  |                      | Gothenburg                | 77                            | 7        | 42.3  | 2.20                  |                      | Carlin * <sup>1</sup>          | 60                            | 21       | 40.4  | 0.30                  |                      |
| Trenton                   | 72                            | 21       | 48.8  | 2.02                  | T.                   | Grand Island a            | 72                            | 10       | 44.7  | 1.08                  |                      | Carson City                    | 70                            | 19       | 42.4  | 1.14                  |                      |
| Unionville                | 74                            | 22       | 48.4  | 1.25                  |                      | Grand Island b            | 72                            | 10       | 44.7  | 1.08                  |                      | Clover Valley                  | 70                            | 19       | 42.4  | 0.28                  |                      |
| Vichy                     | 75                            | 25       | 51.6  | 2.28                  | T.                   | Grand Island c            | 73                            | 8        | 43.7  | 0.66                  |                      | Cranes Ranch                   | 70                            | 19       | 42.4  | 0.24                  |                      |
| Warrensburg               | 75                            | 22       | 50.0  | 1.62                  |                      | Greeley                   | 73                            | 8        | 43.7  | 0.66                  |                      | Elko * <sup>1</sup>            | 62                            | 18       | 35.8  |                       |                      |
| Warrenton                 | 75                            | 28       | 49.1  | 3.14                  | T.                   | Haigler                   | 70                            | 13       | 42.9  | 0.72                  | 0.5                  | Ely                            | 60                            | 15       | 37.4  | 0.50                  | 2.0                  |
| Wheatland                 | 80                            | 17       | 50.8  | 5.29                  | T.                   | Hartington                | 69                            | 15       | 43.2  | 0.87                  |                      | Empire Ranch                   | 58                            | 17       | 34.4  | 0.13                  | 2.5                  |
| Willowsprings             | 81                            | 18       | 52.2  | 2.58                  |                      | Harvard                   | 68                            | 11       | 44.0  | 0.64                  |                      | Fenelon                        | 65                            | 25       | 40.9  | 0.05                  | 0.5                  |
| Wylie                     | 79                            | 19       | 51.0  | 1.61                  |                      | Hastings * <sup>1</sup>   | 73                            | 14       | 42.0  | 0.53                  | 2.2                  | Golconda * <sup>1</sup>        | 69                            | 10       | 35.3  | 0.35                  |                      |
| Zeitonia                  | 79                            | 19       | 51.0  | 1.61                  |                      | Hayes Center              | 73                            | 14       | 42.0  | 0.53                  | 2.2                  | Halleck * <sup>1</sup>         | 71                            | 18       | 46.5  | 0.09                  |                      |
| Montana.                  |                               |          |       |                       |                      | Hay Springs               | 73                            | 14       | 42.0  | 0.53                  | 2.2                  | Hawthorne b                    | 71                            | 18       | 46.5  | 0.09                  |                      |
| Adel                      | 59                            | 10       | 38.6  | 0.25                  |                      | Hebron                    | 73                            | 15       | 46.3  | 0.65                  | T.                   | Hot Springs                    | 62                            | 20       | 40.7  | T.                    |                      |
| Boulder                   | 58                            | 21       | 37.4  | 0.05                  | 0.5                  | Hickman                   | 70                            | 17       | 44.0  | 1.50                  |                      | Humboldt * <sup>1</sup>        | 62                            | 20       | 40.7  | T.                    |                      |
| Butte                     | 57                            | 20       | 40.2  | 0.14                  | 1.0                  | Holdrege * <sup>1</sup>   | 70                            | 17       | 44.0  | 1.50                  |                      | Lee                            | 65                            | 24       | 44.9  | 3.41                  | 2.0                  |
| Canyon Ferry              | 59                            | 16       | 38.8  | 0.22                  | 0.5                  | Hooper * <sup>1</sup>     | 68                            | 14       | 43.1  | 0.97                  | T.                   | Lewers Ranch                   | 73                            | 30       | 52.2  | 0.66                  | 0.4                  |
| Chinook                   | 67                            | 14       | 39.1  | 0.50                  | 3.0                  | Imperial                  | 75                            | 1        | 43.0  | 1.94                  | 0.5                  | Los Vegas                      | 70                            | 21       | 41.2  | 0.16                  |                      |
| Corvallis                 | 60                            | 20       | 46.3  | 0.14                  | 1.0                  | Johnstown                 | 70                            | 1        | 42.2  | 0.12                  | 1.0                  | Lovelocks * <sup>1</sup>       | 70                            | 21       | 41.2  | 0.16                  |                      |
| Crow Agency               | 68                            | 11       | 39.3  | 0.60                  | 0.0                  | Kearney                   | 70                            | 1        | 42.2  | 0.12                  | 1.0                  | Martins                        | 66                            | 20       | 42.6  | 0.96                  |                      |
| Dearborn Canyon           | 62                            | 25       | 41.8  | 0.10                  | 1.0                  | Kennedy                   | 70                            | 1        | 42.2  | 0.12                  | 1.0                  | Mill City * <sup>1</sup>       | 70                            | 20       | 41.4  | 0.15                  |                      |
| Deer Lodge                | 63                            | 12       | 39.2  | 0.26                  | 2.0                  | Kimball                   | 69                            | 11       | 42.3  | T.                    | 2.0                  | Monitor Mill                   | 60                            | 18       | 38.2  | 0.46                  | 2.0                  |
| Dell                      | 59                            | 12       | 34.6  | 0.26                  | 1.0                  | Kirkwood * <sup>1</sup>   | 69                            | 11       | 40.4  | 0.67                  | 2.0                  | Palisade * <sup>1</sup>        | 67                            | 22       | 39.7  | 1.26                  |                      |
| Ekulaka                   | 66                            | 18       | 41.2  | 0.12                  | 1.0                  | Lexington                 | 74                            | 0        | 44.1  | 1.23                  |                      | Palmetto                       | 65                            | 13       | 40.1  | 1.55                  | 8.0                  |
| Fort Benton               | 65                            | 22       | 43.6  | T.                    |                      | Lincoln d                 | 73                            | 24       | 48.4  | 0.65                  |                      | Reno State University          | 66                            | 22       | 43.0  | 0.47                  |                      |
| Fort Keogh                | 68                            | 12       | 40.7  | 0.22                  |                      | Lodgepole *               | 68                            | 1        | 38.7  | T.                    | T.                   | Silver Peak                    | 71                            | 20       | 46.0  | 0.22                  |                      |
| Fort Logan                | 58                            | 7        | 37.3  | 0.10                  |                      | Loup * <sup>1</sup>       | 70                            | 2        | 41.6  | 0.66                  |                      | Sodaville                      | 68                            | 10       | 44.8  | 0.07                  |                      |
| Glasgow                   | 60                            | 7        | 36.0  | 0.41                  |                      | Lynch                     | 73                            | 3        | 43.8  | 1.18                  | T.                   | Tecoma                         | 60                            | 19       | 39.2  | 0.00                  |                      |
| Glendive                  | 65                            | 16       | 40.3  | 0.30                  | T.                   | Lyons                     | 70                            | 3        | 43.8  | 1.18                  | T.                   | Toano * <sup>1</sup>           | 65                            | 23       | 39.6  | 0.35                  | 3.5                  |
| Glenwood                  | 65                            | 16       | 37.4  | 0.59                  |                      | McCook                    | 70                            | 10       | 43.9  | 0.57                  | T.                   | Tuscarora                      | 54                            | 19       | 38.6  | 0.91                  | 4.0                  |
| Great Falls               | 62                            | 22       | 44.0  | 0.20                  | 0.0                  | McCook                    | 70                            | 10       | 43.9  | 0.57                  | T.                   | Tybo                           | 72                            | 24       | 42.0  | 0.90                  |                      |
| Harlem                    | 64                            | 5        | 39.2  | 0.73                  | 6.0                  | Madison                   | 75                            | 0        | 38.8  | 0.88                  | T.                   | Verdi * <sup>1</sup>           | 70                            | 14       | 41.1  | 0.10                  |                      |
| Kipp                      | 64                            | 5        | 39.2  | 0.73                  | 6.0                  | Madrid * <sup>5</sup>     | 75                            | 0        | 38.8  | 0.88                  | T.                   | Wadsworth * <sup>1</sup>       | 70                            | 14       | 41.1  | 0.10                  |                      |
| Livingston                | 67                            | 9        | 37.3  | 0.25                  | 0.0                  | Marquette                 | 70                            | 10       | 43.9  | 0.57                  | T.                   | Wells                          | 60                            | 12       | 35.2  | 0.56                  |                      |
| Manhattan                 | 65                            | 18       | 39.8  | 0.00                  |                      | Merriman                  | 70                            | 10       | 43.9  | 0.57                  | T.                   | New Hampshire.                 |                               |          |       |                       |                      |
| Martinsdale               | 52                            | 18       | 36.6  | 0.07                  |                      | Minden a                  | 73                            | 10       | 44.6  | 1.15                  |                      | Alstead * <sup>6</sup>         | 51                            | 12       | 34.4  | 2.27                  | 4.0                  |
| Marysville                | 52                            | 18       | 36.6  | 0.07                  |                      | Minden b                  | 73                            | 10       | 44.6  | 1.15                  |                      | Berlin Mills                   | 60                            | 5        | 32.3  | 1.89                  | 7.0                  |
| Missoula                  | 57                            | 20       | 39.2  | 1.30                  | 0.0                  | Monroe                    | 70                            | 10       | 44.6  | 1.15                  |                      | Bethlehem                      | 51                            | 9        | 31.4  | 2.68                  | 6.5                  |
| Ovando                    | 58                            | 10       | 34.1  | 1.92                  | 9.2                  | Nebraska City b           | 70                            | 21       | 47.2  | 0.83                  | T.                   | Brookline * <sup>1</sup>       | 60                            | 15       | 35.4  | 2.25                  | 5.0                  |
| Parrot                    | 56                            | 19       | 38.6  | 0.29                  | T.                   | Nebraska City c           | 74                            | 21       | 47.9  | 0.81                  | T.                   | Claremont                      | 56                            | 5        | 35.1  | 1.42                  | 4.0                  |
| Plains                    | 58                            | 20       | 39.4  | 0.80                  | 1.0                  | Nemaha * <sup>1</sup>     | 74                            | 21       | 47.9  | 0.81                  | T.                   | Concord                        | 61                            | 11       | 34.4  | 2.35                  | 5.3                  |
| Poplar                    | 65                            | 16       | 37.6  | 0.15                  |                      | Nesbit                    | 69                            | 2        | 40.8  | 1.27                  | T.                   | Durham                         | 63                            | 14       | 37.6  | 1.97                  | 5.0                  |
| Red Lodge                 | 80                            | 13       | 42.5  |                       |                      | Norfolk b                 | 66                            | 6        | 42.1  | 0.78                  | T.                   | Grafton                        | 63                            | 2        | 32.7  | 1.68                  | 4.0                  |
| Ridge                     | 61                            | 10       | 39.5  | 0.91                  | 1.0                  | North Loup                | 72                            | 4        | 43.3  | 0.65                  | T.                   | Hanover                        | 56                            | 8        | 34.1  | 1.89                  | 3.0                  |
| St. Pauls                 | 65                            | 23       | 42.6  | 0.03                  | T.                   | Oakdale                   | 68                            | 7        | 42.5  | 0.43                  | 0.3                  | Keene                          | 59                            | 11       | 35.0  | 1.80                  | 2.0                  |
| Troy                      | 58                            | 27       | 40.3  | 2.84                  | 2.0                  | O'Neill                   | 72                            | 6        | 43.0  | 1.02                  | 2.0                  | Littleton                      | 50                            | 10       | 30.6  | 4.06                  | 7.0                  |
| Utica                     | 62                            | 23       | 41.9  | 0.11                  | 0.0                  | Ord                       | 72                            | 6        | 43.0  | 1.02                  | 2.0                  | Nashua                         | 62                            | 16       | 36.0  | 1.87                  | 4.0                  |
| Yale                      | 57                            | 14       | 38.9  | 0.36                  | 0.0                  | Oseola                    | 70                            | 10       | 43.9  | 0.57                  | T.                   | Newton                         | 62                            | 13       | 36.6  | 2.40                  | T.                   |
| Nebraska.                 |                               |          |       |                       |                      | Ough                      | 70                            | 10       | 43.9  | 0.57                  | T.                   | North Conway                   | 62                            | 11       | 34.7  | 2.40                  | 4.0                  |
| Agree                     | 70                            | 10       | 43.9  | 0.57                  | 1.0                  | Palmer b * <sup>2</sup>   | 80                            | 6        | 50.0  | 0.50                  |                      | Peterboro                      | 59                            | 11       | 34.4  | 2.16                  | 2.0                  |
| Albion                    | 70                            | 10       | 43.9  | 0.57                  | 1.0                  | Palmyra                   | 70                            | 17       | 46.0  | 0.81                  |                      | Plymouth                       | 59                            | 8        | 33.6  | 1.54                  | 4.2                  |
| Alliance                  | 73                            | 4        | 43.9  | 1.44                  |                      | Plattsburgh b             | 70                            | 17       | 46.0  | 0.81                  |                      | Sanborn                        | 60                            | 14       | 34.5  | 2.02                  | 5.5                  |
| Alma                      | 73                            | 4        | 43.9  | 1.44                  |                      | Pleasant Hill             | 72                            | 3        | 43.0  | 0.94                  | T.                   | Stratford                      | 59                            | 6        | 32.2  | 1.93                  | 4.5                  |
| Ansel                     | 73                            | 0        | 41.5  | 0.89                  |                      | Ravenna a                 | 66                            | 15       | 43.4  | 1.04                  |                      | Warner                         | 59                            | 6        | 32.2  | 1.93                  | 5.0                  |
| Arapahoe * <sup>1</sup>   | 76                            | 6        | 42.7  | 1.75                  |                      | Redcloud b * <sup>1</sup> | 66                            | 15       | 43.4  | 1.04                  |                      | New Jersey.                    |                               |          |       |                       |                      |
| Arberville * <sup>1</sup> | 72                            | 14       | 43.6  | 0.89                  |                      | Republican                | 66                            | 15       | 43.4  | 1.04                  |                      | Asbury Park                    | 67                            | 22       | 46.4  | 1.88                  |                      |
| Ashland a                 | 71                            | 16       | 46.5  | 0.96                  |                      | Rulo                      | 66                            | 15       | 43.4  | 1.04                  |                      | Bayonne                        | 64                            | 27       | 45.0  | 2.19                  | 0.4                  |
| Ashland b * <sup>1</sup>  | 75                            | 21       | 44.8  | 0.93                  |                      | St. Libory                | 70                            | 8        | 44.6  | 0.71                  |                      | Belvidere                      | 61                            | 17       | 38.8  | 2.80                  | 4.0                  |
| Ashton                    | 75                            | 16       | 48.2  | 0.81                  | T.                   | St. Paul                  | 70                            | 8        | 44.6  | 0.71                  |                      | Bergen Point                   | 63                            | 30       | 45.3  | 3.11                  | 0.2                  |
| Auburn                    | 75                            | 16       | 48.2  | 0.81                  | T.                   | Salem                     | 70                            | 10       | 44.2  | 1.21                  | 1.0                  | Beverly                        | 66                            | 24       | 44.6  | 2.27                  |                      |
| Aurora * <sup>1</sup>     | 69                            | 16       | 45.3  | 0.79                  | T.                   | Santee                    | 70                            | 10       | 44.2  | 1.21                  | 1.0                  | Billingsport * <sup>1</sup>    | 58                            | 30       | 44.5  | 1.92                  |                      |
| Bartley                   | 70                            | 18       | 46.2  | 0.82                  |                      | Sargent                   | 70                            | 10       | 44.2  | 1.21                  | 1.0                  | Bridgeton                      | 70                            | 23       | 46.2  | 1.39                  |                      |
| Beatrice                  | 70                            | 18       | 46.2  | 0.82                  |                      | Schuyler                  | 70                            | 10       | 44.2  | 1.21                  | 1.0                  | Camden                         | 63                            | 27       | 44.3  | 1.91                  |                      |
| Beaver                    | 76                            | 5        | 45.0  | 2.07                  |                      | Seneca                    | 68                            | 19       | 46.2  | 0.98                  |                      | Cape May C. H.                 | 68                            | 22       | 47.3  | 1.81                  |                      |
| Bellevue                  | 76                            | 5        | 45.0  | 2.07                  |                      | Seward * <sup>1</sup>     | 68                            | 19       | 46.2  | 0.98                  |                      | Charlotteburg                  | 58                            | 20       | 40.7  | 2.48                  | 5.0                  |
| Benedict                  | 76                            | 5        | 45.0  | 2.07                  |                      | Smithfield                | 68                            | 19       | 46.2  | 0.98                  |                      | Chester                        | 58                            | 23       | 41.3  | 2.95                  | 5.5                  |
| Benkleman                 | 76                            | 5        | 45.0  | 2.07                  |                      | Spragg                    | 68                            | 19       | 46.2  | 0.98                  |                      | Clayton                        | 65                            | 2        |       |                       |                      |

TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Temperature.<br>(Fahrenheit.) |          |       |                       |                      |      | Precipitation.           |          | Temperature.<br>(Fahrenheit.) |                       |                      |     |                        |          | Precipitation. |                       | Temperature.<br>(Fahrenheit.) |          |          |       |                       |                      | Precipitation. |          |          |       |                       |                      |  |  |
|-------------------------------|----------|-------|-----------------------|----------------------|------|--------------------------|----------|-------------------------------|-----------------------|----------------------|-----|------------------------|----------|----------------|-----------------------|-------------------------------|----------|----------|-------|-----------------------|----------------------|----------------|----------|----------|-------|-----------------------|----------------------|--|--|
| Stations.                     |          |       |                       |                      |      | Stations.                |          | Stations.                     |                       |                      |     |                        |          | Stations.      |                       | Stations.                     |          |          |       |                       |                      | Stations.      |          |          |       |                       |                      |  |  |
| Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |      | Maximum.                 | Minimum. | Mean.                         | Rain and melted snow. | Total depth of snow. |     | Maximum.               | Minimum. | Mean.          | Rain and melted snow. | Total depth of snow.          | Maximum. | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                | Maximum. | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |  |  |
| New Jersey—Cont'd.            |          |       |                       |                      |      | New York—Cont'd.         |          |                               |                       |                      |     | North Carolina—Cont'd. |          |                |                       |                               |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Plainfield.....               | 62       | 21    | 41.7                  | 3.27                 | 1.0  | Jamestown.....           | 58       | 26                            | 40.8                  | 1.95                 | T.  | Morganton.....         | 78       | 21             | 53.7                  | 0.80                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Rancocas.....                 | 62       | 21    | 41.7                  | 3.02                 | T.   | King Station.....        | 58       | 26                            | 40.8                  | 2.66                 | T.  | Mount Airy.....        | 70       | 21             | 47.2                  | 1.94                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Riverton.....                 | 64       | 17    | 42.0                  | 3.16                 | 3.0  | Lakehill.....            | 61       | 18                            | 37.4                  | 2.89                 | T.  | Mount Pleasant.....    | 72       | 29             | 50.8                  | 1.96                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Rocktown.....                 | 62       | 20    | 41.2                  | 3.19                 | T.   | Liberty.....             | 56       | 18                            | 37.2                  | 2.23                 | 2.6 | Murphy.....            | 78       | 22             | 53.0                  | 3.15                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Roseland.....                 | 62       | 20    | 41.2                  | 3.01                 | 3.8  | Littlefalls.....         | 53       | 17                            | 35.8                  | 2.46                 | T.  | Newbern.....           | 78       | 22             | 55.0                  | 1.83                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Salem.....                    | 68       | 25    | 45.9                  | 1.61                 | T.   | Lockport.....            | 58       | 26                            | 40.0                  | 0.49                 | T.  | Oakridge.....          | 74       | 26             | 49.8                  | 1.32                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Somerville.....               | 63       | 22    | 43.0                  | 2.38                 | T.   | Lowville.....            | 55       | 9                             | 35.9                  | 2.73                 | T.  | Patterson.....         | 70       | 25             | 44.4                  | 0.91                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| South Orange.....             | 61       | 26    | 42.6                  | 2.60                 | 2.0  | Lyndonville.....         | 58       | 27                            | 40.8                  | 0.85                 | T.  | Pittsboro.....         | 78       | 26             | 50.8                  | 1.49                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Toms River.....               | 71       | 19    | 44.1                  | 1.80                 | T.   | Lyons.....               | 58       | 27                            | 40.8                  | 2.01                 | T.  | Rockingham.....        | 71       | 30             | 51.0                  | 2.30                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Trenton.....                  | 65       | 27    | 46.4                  | 2.07                 | T.   | Madison Barracks.....    | 60       | 14                            | 37.8                  | 2.15                 | T.  | Roxboro.....           | 74       | 24             | 48.2                  | 1.44                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Tuckerton.....                | 64       | 21    | 44.7                  | 1.72                 | T.   | Mayle.....               | 60       | 24                            | 39.8                  | 1.50                 | T.  | Salem.....             | 74       | 27             | 49.0                  | 1.00                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Vineland.....                 | 71       | 24    | 45.3                  | 1.42                 | T.   | Middletown.....          | 60       | 24                            | 39.8                  | 2.49                 | 2.5 | Salisbury.....         | 75       | 31             | 52.2                  | 1.34                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Woodbine.....                 | 65       | 23    | 46.5                  | 1.45                 | T.   | Mohonk Lake.....         | 55       | 23                            | 38.4                  | 2.45                 | 0.5 | Saxon.....             | 77       | 25             | 49.4                  | 0.74                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| New Mexico.                   |          |       |                       |                      |      | Mount Morris.....        | 60       | 18                            | 38.6                  | 1.30                 | T.  | Selma.....             | 76       | 30             | 51.8                  | 1.60                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Albert.....                   | 73       | 23    | 47.4                  | 1.35                 |      | Newark Valley.....       | 56       | 15                            | 34.8                  | 3.08                 | T.  | Settle.....            | 70       | 25             | 47.1                  | 0.72                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Albuquerque.....              | 67       | 23    | 44.0                  | 0.20                 |      | New Lisbon.....          | 56       | 15                            | 34.8                  | 1.93                 | 1.2 | Sloan.....             | 78       | 29             | 53.8                  | 1.62                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Alma.....                     | 76       | 18    | 46.5                  | 0.70                 |      | North Germantown.....    | 55       | 22                            | 39.4                  | 1.54                 | T.  | Soapstone Mount.....   | 76       | 22             | 49.2                  | 1.85                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Aztec.....                    | 72       | 18    | 42.4                  | 0.45                 | 1.0  | North Hammond.....       | 58       | 20                            | 37.9                  | 2.58                 | 1.6 | Southern Pines a.....  | 75       | 32             | 56.3                  | 2.86                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Bellbranch.....               | 74       | 23    | 45.8                  | 0.45                 | 1.0  | North Lake.....          | 56       | 7                             | 32.2                  | 2.48                 | 0.5 | Southern Pines b.....  | 75       | 32             | 56.3                  | 2.86                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Bernalillo.....               | 65       | 12    | 33.4                  | 0.35                 | 2.0  | Number Four.....         | 54       | 5                             | 32.9                  | 3.23                 | 1.8 | Southern Pines c.....  | 76       | 40             | 58.6                  | 0.64                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Bluewater.....                | 65       | 12    | 33.4                  | 0.35                 | 2.0  | Nunda.....               | 55       | 19                            | 37.8                  | 2.09                 | 1.0 | Springhope.....        | 70       | 30             | 48.2                  | 0.85                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Cambray.....                  | 65       | 12    | 33.4                  | 0.35                 | 2.0  | Ogdenburg.....           | 67       | 18                            | 38.1                  | 2.09                 | 1.0 | Tarboro.....           | 78       | 35             | 50.3                  | 0.92                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Carlsbad.....                 | 65       | 12    | 33.4                  | 0.35                 | 2.0  | Oneonta.....             | 59       | 19                            | 39.6                  | 1.70                 | T.  | Waynesville.....       | 68       | 30             | 46.7                  | 1.19                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Deming.....                   | 65       | 16    | 40.6                  | 0.43                 | 0.4  | Oxford.....              | 57       | 17                            | 37.1                  | 2.03                 | 2.0 | Weldon a.....          | 74       | 32             | 49.1                  | 1.50                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| East Las Vegas.....           | 65       | 16    | 40.6                  | 0.43                 | 0.4  | Palermo.....             | 54       | 15                            | 37.4                  | 2.31                 | T.  | Weldon b.....          | 74       | 32             | 49.1                  | 1.50                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Engle.....                    | 77       | 20    | 47.2                  | 0.00                 |      | Penn Yan.....            | 60       | 25                            | 39.9                  | 2.41                 | 0.7 | North Dakota.          |          |                |                       |                               |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Espanola.....                 | 70       | 19    | 41.8                  | 0.49                 |      | Perry City.....          | 55       | 20                            | 36.8                  | 3.34                 | 2.2 | Amenia.....            | 63       | 12             | 35.8                  | 0.17                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Folsom.....                   | 66       | 5     | 38.3                  | 0.55                 | 25.0 | Phoenix.....             | 55       | 20                            | 36.8                  | 3.34                 | 2.2 | Ashley.....            | 62       | 8              | 35.9                  | 0.65                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Fort Bayard.....              | 76       | 25    | 48.3                  | 0.33                 |      | Pine City.....           | 55       | 20                            | 36.8                  | 3.34                 | 2.2 | Berlin.....            | 65       | 10             | 37.2                  | 0.55                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Fort Union.....               | 77       | 12    | 44.1                  | 0.10                 | T.   | Plattsburg Barracks..... | 52       | 15                            | 36.1                  | 2.04                 | 0.7 | Bottineau.....         | 58       | 4              | 31.8                  | 0.75                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Fort Wingate.....             | 75       | 18    | 47.9                  | 0.30                 | 1.5  | Port Byron.....          | 57       | 24                            | 39.4                  | 2.43                 | T.  | Buxton.....            | 58       | 13             | 35.4                  | T.                            |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Gage.....                     | 73       | 20    | 42.7                  | 0.50                 |      | Port Jervis.....         | 61       | 22                            | 40.2                  | 2.32                 | 2.0 | Church Ferry.....      | 67       | 13             | 35.4                  | 0.55                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Gallisteo.....                | 73       | 20    | 42.7                  | 0.50                 |      | Poughkeepsie.....        | 62       | 15                            | 38.0                  | 2.13                 | 1.0 | Coalharbor.....        | 62       | 14             | 36.5                  | 0.45                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Gallinas Spring.....          | 72       | 16    | 44.4                  | 0.87                 |      | Primrose.....            | 64       | 20                            | 40.7                  | 2.38                 | 2.0 | Devils Lake.....       | 68       | 19             | 35.4                  | 0.40                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Gila.....                     | 79       | 20    | 49.4                  | 0.46                 |      | Richmondville.....       | 56       | 13                            | 35.2                  | 1.58                 | T.  | Dickinson.....         | 65       | 10             | 38.2                  | 0.22                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Hillsboro.....                | 68       | 16    | 42.0                  | 0.58                 |      | Ridgeway.....            | 61       | 26                            | 40.8                  | 1.02                 | T.  | Dunseith.....          | 63       | 14             | 34.4                  | T.                            |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Las Vegas Hot Springs.....    | 67       | 18    | 42.8                  | 0.10                 |      | Rome.....                | 50       | 17                            | 34.9                  | 3.48                 | 0.5 | Ellendale.....         | 62       | 12             | 38.2                  | 0.40                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Lordsburg.....                | 67       | 18    | 42.8                  | 0.10                 |      | Romulus.....             | 58       | 26                            | 40.4                  | 3.22                 | 0.5 | Fargo.....             | 64       | 9              | 36.0                  | 0.27                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Lower Penasco.....            | 67       | 18    | 42.8                  | 0.10                 |      | Rose.....                | 55       | 19                            | 37.5                  | 2.39                 | 1.9 | Forman.....            | 68       | 10             | 37.4                  | 0.44                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Mesa Park.....                | 82       | 11    | 43.6                  | 1.10                 | 6.0  | St. Johnsville.....      | 55       | 19                            | 37.5                  | 2.39                 | 1.9 | Fort Berthold.....     | 63       | 14             | 40.5                  | 0.26                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Messilla Park.....            | 82       | 11    | 43.6                  | 1.10                 | 6.0  | Saranac Lake.....        | 54       | 10                            | 32.8                  | 0.79                 | T.  | Fort Yates.....        | 65       | 12             | 37.6                  | 0.06                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Raton.....                    | 70       | 11    | 43.6                  | 1.10                 | 6.0  | Saratoga Springs.....    | 57       | 18                            | 37.8                  | 2.27                 | T.  | Fullerton.....         | 63       | 10             | 34.2                  | 0.61                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Roswell.....                  | 80       | 13    | 49.0                  | 0.37                 | 2.0  | Schenectady.....         | 57       | 19                            | 38.4                  | 2.38                 | T.  | Gallatin.....          | 62       | 2              | 34.0                  | 0.17                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| San Marcial.....              | 77       | 18    | 46.9                  | 0.37                 | 2.0  | Schenectady.....         | 57       | 19                            | 38.4                  | 2.38                 | T.  | Glenullin.....         | 65       | 12             | 38.0                  | 0.55                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Socorro.....                  | 73       | 19    | 47.1                  | 0.46                 | 2.0  | Scherer.....             | 57       | 19                            | 38.4                  | 2.38                 | T.  | Grafton.....           | 58       | 10             | 33.4                  | T.                            |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Strauss.....                  | 69       | 17    | 43.2                  | 2.25                 | 2.0  | Setauket.....            | 63       | 30                            | 44.8                  | 1.21                 | 1.0 | Hamilton.....          | 60       | 13             | 34.0                  | 0.58                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Whiteoaks.....                | 69       | 17    | 43.2                  | 2.25                 | 2.0  | Sherwood.....            | 60       | 23                            | 39.0                  | 2.16                 | 1.0 | Hannaford.....         | 63       | 11             | 36.8                  | T.                            |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| New York.                     |          |       |                       |                      |      | Shortsville.....         | 60       | 23                            | 39.0                  | 2.16                 | 1.0 | Kelso.....             | 60       | 10             | 34.8                  | T.                            |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Adams.....                    | 56       | 23    | 39.5                  | 3.58                 | 4.0  | Skaneateles.....         | 60       | 23                            | 39.0                  | 2.16                 | 1.0 | Larimore.....          | 66       | 14             | 36.6                  | 0.19                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Addison.....                  | 56       | 23    | 39.5                  | 3.58                 | 4.0  | South Canisteo.....      | 56       | 19                            | 37.2                  | 1.80                 | 4.0 | McKinney.....          | 63       | 4              | 34.0                  | 0.10                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Akron.....                    | 57       | 18    | 38.6                  | 2.40                 | 2.5  | Southeast Reservoir..... | 57       | 15                            | 35.6                  | 1.43                 | 2.0 | Mayville.....          | 63       | 12             | 38.8                  | 0.10                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Alfred.....                   | 57       | 18    | 38.6                  | 2.40                 | 2.5  | South Kortright.....     | 60       | 17                            | 36.1                  | 3.29                 | 0.8 | Medora.....            | 63       | 13             | 38.8                  | 0.07                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Angelica.....                 | 57       | 18    | 38.6                  | 2.40                 | 2.5  | Straits Corners.....     | 60       | 17                            | 36.1                  | 3.29                 | 0.8 | Melville.....          | 68       | 18             | 37.2                  | 0.50                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Appleton.....                 | 60       | 28    | 42.0                  | 0.95                 | 0.5  | Volusia.....             | 60       | 24                            | 39.6                  | 1.95                 | 4.0 | Milton.....            | 65       | 16             | 32.7                  | 0.35                          |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |
| Arcade.....                   | 59       | 30    | 37.1                  | 1.70                 | 0.5  | Watertown.....           | 58       | 18                            | 39.1                  | 2                    |     |                        |          |                |                       |                               |          |          |       |                       |                      |                |          |          |       |                       |                      |  |  |



TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.                  | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.               | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.               | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|----------------------------|-------------------------------|----------|-------|-----------------------|----------------------|-------------------------|-------------------------------|----------|-------|-----------------------|----------------------|-------------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                            | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                         | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                         | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| Ohio—Cont'd.               |                               |          |       |                       |                      | Oklahoma—Cont'd.        |                               |          |       |                       |                      | Pennsylvania—Cont'd.    |                               |          |       |                       |                      |
| Coalton.....               | 70                            | 20       | 45.4  | 1.57                  |                      | Beaver.....             | 75                            | 18       | 48.7  | 1.57                  |                      | Athens.....             | 59                            | 21       | 39.4  | 3.26                  | 2.4                  |
| Colebrook.....             | 67                            | 21       | 40.6  | 0.80                  |                      | Burnett.....            | 84                            | 19       | 54.1  | 5.24                  |                      | Beaver Dam.....         |                               |          |       | 2.94                  |                      |
| Dayton a.....              | 67                            | 32       | 45.7  | 1.51                  |                      | Fort Reno.....          | 80                            | 22       | 52.1  | 5.43                  |                      | Brookville.....         |                               |          |       | 1.67                  |                      |
| Dayton b.....              | 67                            | 32       | 45.7  | 1.34                  |                      | Fort Sill.....          | 89                            | 20       | 55.6  | 7.90                  |                      | Browers Lock.....       |                               |          |       | 2.89                  |                      |
| Defiance.....              | 64                            | 21       | 42.0  | 2.06                  | 0.5                  | Guthrie.....            | 77                            | 25       | 53.8  | 5.00                  |                      | Butler.....             | 63                            | 22       | 41.6  | 2.01                  | 1.0                  |
| Delaware.....              | 67                            | 22       | 43.9  | 1.80                  | T.                   | Hennessey.....          | 81                            | 23       | 52.2  | 4.98                  |                      | Carlisle.....           | 65                            | 17       | 38.7  | 2.27                  |                      |
| Demos.....                 | 64                            | 25       | 42.8  | 2.27                  |                      | Hopetown.....           | 76                            | 20       | 50.5  | 2.59                  |                      | Cassandra.....          | 58                            | 22       | 40.3  | 3.19                  | T.                   |
| Elyria.....                | 68                            | 26       | 43.3  | 1.70                  | T.                   | Jefferson.....          | 77                            | 19       | 48.4  | 2.55                  |                      | Cedarrun.....           |                               |          |       | 0.75                  | 0.5                  |
| Findlay.....               | 67                            | 24       | 43.2  | 1.71                  | T.                   | Kingfisher.....         | 90                            | 24       | 52.6  | 5.35                  |                      | Centerhall.....         | 60                            | 20       | 40.5  | 1.98                  | 1.0                  |
| Frankfort.....             | 68                            | 22       | 44.6  | 2.05                  |                      | Mangum.....             | 84                            | 19       | 52.4  | 5.88                  |                      | Chambersburg.....       | 64                            | 21       | 41.4  | 2.15                  |                      |
| Garrettsville.....         | 66                            | 21       | 42.8  | 1.46                  | 2.5                  | Newkirk.....            | 75                            | 23       | 50.1  | 1.65                  |                      | Coatesville.....        | 67                            | 23       | 44.7  | 2.38                  |                      |
| Granville.....             | 66                            | 21       | 43.6  | 1.99                  |                      | Norman.....             | 79                            | 31       | 53.8  | 6.48                  |                      | Confluence.....         | 65                            | 21       | 42.2  | 3.90                  |                      |
| Gratiot.....               | 64                            | 21       | 43.2  | 1.41                  | 2.2                  | Pawhuska.....           |                               |          |       | 1.63                  |                      | Coopersburg.....        | 65                            | 26       | 45.0  | 2.20                  |                      |
| Greenfield.....            | 66                            | 29       | 46.5  | 2.10                  | T.                   | Perry.....              | 79                            | 22       | 53.4  | 2.49                  |                      | Davis Island Dam.....   |                               |          |       | 4.86                  |                      |
| Greenhill.....             | 63                            | 19       | 41.9  | 1.51                  | 0.3                  | Prudence.....           | 80                            | 24       | 53.4  | 4.86                  |                      | Derry Station.....      | 62                            | 20       | 42.6  | 4.29                  |                      |
| Greenspring.....           | 68                            | 23       | 42.4  | 2.21                  | T.                   | Sac and Fox Agency..... | 82                            | 19       | 52.1  | 4.36                  |                      | Driftwood.....          |                               |          |       | 4.08                  | 2.0                  |
| Greenville.....            | 63                            | 25       | 43.8  | 1.64                  |                      | Stillwater.....         | 80                            | 25       | 54.4  | 1.93                  |                      | Duncannon.....          |                               |          |       | 1.46                  |                      |
| Hanging Rock.....          | 69                            | 25       | 46.3  | 1.36                  |                      | Waukomis.....           | 78                            | 25       | 52.4  | 3.30                  |                      | Dushore.....            | 58                            | 15       | 37.2  | 2.84                  | 5.8                  |
| Hillhouse.....             | 66                            | 23       | 41.8  | 1.79                  |                      | Winnview.....           | 77                            | 25       | 52.4  | 3.60                  |                      | Dyberry.....            | 59                            | 16       | 37.8  | 2.26                  | 4.0                  |
| Hillsboro.....             | 68                            | 20       | 44.6  | 1.81                  | 2.0                  | Woodward.....           | 78                            | 23       | 52.6  | 1.60                  |                      | East Mauch Chunk.....   | 62                            | 21       | 41.2  | 2.98                  | 3.0                  |
| Hiram.....                 | 64                            | 28       | 42.2  | 1.79                  | 0.5                  | Oregon.                 |                               |          |       |                       |                      | Easton.....             | 62                            | 23       | 42.7  |                       |                      |
| Hudson.....                | 65                            | 26       | 41.8  | 1.57                  | T.                   | Albany.....             |                               |          |       | 8.89                  |                      | Ellwood Junction.....   |                               |          |       | 1.60                  |                      |
| Jacksonboro.....           | 68                            | 26       | 46.1  | 1.50                  | T.                   | Alpha.....              | 68                            | 34       | 51.8  | 22.92                 |                      | Emporium.....           | 57                            | 20       | 39.2  | 2.86                  | 1.6                  |
| Kenton.....                | 73                            | 21       | 45.4  | 3.04                  |                      | Arlington.....          | 63                            | 33       | 47.8  | 1.52                  |                      | Ephrata.....            | 60                            | 22       | 43.6  | 3.40                  |                      |
| Killbuck.....              | 65                            | 24       | 43.8  | 1.25                  | T.                   | Ashland.....            | 69                            | 31       | 49.8  | 2.46                  |                      | Everett.....            | 65                            | 21       | 41.2  | 1.40                  |                      |
| Lancaster.....             | 65                            | 23       | 44.2  | 1.64                  | T.                   | Aurora.....             | 63                            | 38       | 51.6  | 6.72                  |                      | Farrandville.....       |                               |          |       | 4.00                  |                      |
| Lepso.....                 | 64                            | 20       | 43.0  | 1.63                  |                      | Aurora (near).....      | 67                            | 35       | 50.8  | 8.12                  |                      | Forks of Neshaminy..... | 60                            | 26       | 41.2  | 2.26                  |                      |
| Levering.....              |                               |          |       | 2.19                  | T.                   | Bandon.....             | 63                            | 37       | 55.2  | 15.81                 |                      | Franklin.....           | 65                            | 20       | 42.2  | 0.61                  |                      |
| Logan.....                 |                               |          |       | 2.78                  | T.                   | Bay City.....           | 64                            | 39       | 52.6  | 22.02                 |                      | Frederick.....          |                               |          |       | 2.32                  |                      |
| Lordstown.....             | 67                            | 21       | 41.6  | 1.55                  | T.                   | Beulah.....             | 75                            | 18       | 40.8  | 1.72                  |                      | Freeport.....           |                               |          |       | 3.62                  |                      |
| McArthur.....              | 68                            | 20       | 44.0  | 2.29                  | T.                   | Blalock.....            | 61                            | 36       | 48.8  | 2.58                  |                      | Girardville.....        |                               |          |       | 2.63                  | 1.0                  |
| McConnellsville.....       | 70                            | 21       | 45.8  | 1.58                  | T.                   | Brownsville.....        | 74                            | 36       | 53.4  | 5.70                  |                      | Grampan.....            | 58                            | 20       | 39.4  | 2.31                  | T.                   |
| Mansfield.....             |                               |          |       | 2.40                  |                      | Bullrun.....            | 57                            | 37       | 48.0  | 12.35                 |                      | Greensboro.....         | 65                            | 20       | 43.8  | 3.72                  |                      |
| Marletta.....              | 67                            | 26       | 46.7  | 2.03                  |                      | Burns.....              | 62                            | 10       | 38.5  | 4.55                  |                      | Hamburg.....            | 60                            | 30       | 45.8  | 3.15                  | 0.5                  |
| Marion.....                | 67                            | 23       | 44.4  | 2.29                  | T.                   | Cascade Locks.....      | 60                            | 39       | 49.3  | 16.66                 |                      | Hawley.....             | 62                            | 10       | 38.4  | 2.32                  | 3.0                  |
| Medina.....                | 67                            | 23       | 43.6  | 1.57                  | T.                   | Comstock.....           | 67                            | 36       | 51.0  | 7.52                  |                      | Hawthorn.....           | 72                            | 21       | 42.9  | 2.90                  | T.                   |
| Millfordton.....           | 67                            | 20       | 41.4  | 1.37                  | T.                   | Coquille.....           |                               |          |       | 14.86                 |                      | Hews Island Dam.....    |                               |          |       | 3.41                  |                      |
| Milligan.....              | 70                            | 18       | 43.5  | 1.49                  |                      | Corvallis.....          | 69                            | 35       | 50.8  | 10.93                 |                      | Huntingdon.....         | 66                            | 21       | 41.9  | 3.02                  |                      |
| Millport.....              | 65                            | 21       | 41.6  | 2.12                  | T.                   | Dayville.....           | 77                            | 25       | 49.1  | 1.30                  |                      | Huntingdon.....         |                               |          |       | 3.25                  |                      |
| Montpelier.....            | 60                            | 23       | 40.8  | 2.00                  | 5.0                  | Ella.....               |                               |          |       | 1.60                  |                      | Irwin.....              |                               |          |       | 3.78                  |                      |
| Napoleon.....              | 63                            | 19       | 41.3  | 1.63                  | T.                   | Eugene.....             | 65                            | 35       | 52.0  | 6.14                  |                      | Johnstown.....          | 62                            | 25       | 43.2  | 4.26                  | T.                   |
| Neapolis.....              |                               |          |       | 1.91                  | T.                   | Fairview.....           | 68                            | 43       | 52.2  | 12.45                 |                      | Keating.....            |                               |          |       | 3.72                  | T.                   |
| New Berlin.....            | 65                            | 22       | 43.0  | 1.54                  | 2.0                  | Falls City.....         | 63                            | 36       | 49.0  | 30.96                 |                      | Kennett Square.....     | 67                            | 22       | 44.2  | 2.12                  |                      |
| New Bremen.....            | 64                            | 25       | 45.2  |                       |                      | Forest Grove.....       | 67                            | 33       | 49.8  | 14.22                 |                      | Lancaster.....          | 64                            | 23       | 43.4  | 1.85                  |                      |
| New Holland.....           | 67                            | 24       | 44.9  | 1.76                  | 0.2                  | Gardiner.....           | 64                            | 41       | 53.8  | 20.25                 |                      | Lansdale.....           |                               |          |       | 1.25                  |                      |
| New Paris.....             | 66                            | 23       | 44.2  | 2.31                  | T.                   | Glenora.....            | 63                            | 34       | 48.4  | 35.81                 |                      | Lawrenceville.....      | 57                            | 15       | 36.0  | 3.46                  | 3.0                  |
| New Richmond.....          | 72                            | 26       | 47.8  | 2.62                  | T.                   | Government Camp.....    | 54                            | 27       | 42.1  | 11.60                 | 4.0                  | Lebanon.....            | 61                            | 22       | 42.0  | 2.50                  | T.                   |
| New Waterford.....         | 67                            | 22       | 44.0  | 1.96                  | T.                   | Grants Pass.....        | 65                            | 34       | 49.6  | 7.98                  |                      | Leroy.....              | 64                            | 20       | 37.8  | 3.64                  | 6.0                  |
| North Lewisburg.....       | 67                            | 24       | 43.7  | 1.70                  |                      | Happy Valley.....       | 63                            | 19       | 41.6  | 2.08                  |                      | Lewisburg.....          | 64                            | 22       | 40.3  | 2.88                  | 0.5                  |
| North Royalton.....        | 65                            | 27       | 43.0  | 1.27                  | 0.5                  | Heppner.....            | 65                            | 30       | 48.2  | 1.64                  |                      | Lockhaven.....          | 66                            | 21       | 41.8  | 2.93                  | 1.5                  |
| Norwalk.....               | 66                            | 25       | 43.9  | 1.66                  |                      | Hood River (near).....  | 64                            | 33       | 47.0  | 7.72                  |                      | Lockhaven.....          |                               |          |       | 3.26                  |                      |
| Oberlin.....               | 68                            | 21       | 43.5  | 1.67                  | T.                   | Irvington.....          | 68                            | 42       | 53.9  | 8.19                  |                      | Lock No. 4.....         |                               |          |       | 3.54                  |                      |
| Ohio State University..... | 66                            | 23       | 44.4  | 1.74                  | T.                   | Jacksonville.....       | 68                            | 33       | 47.6  | 4.78                  |                      | Lycippus.....           | 61                            | 23       | 42.7  | 1.74                  |                      |
| Orangeville.....           | 65                            | 19       | 41.4  | 0.75                  | T.                   | Joseph.....             | 64                            | 23       | 39.9  | 1.50                  | T.                   | Mifflin.....            |                               |          |       | 3.15                  |                      |
| Ottawa.....                | 64                            | 21       | 43.8  | 1.88                  | T.                   | Junction City.....      | 70                            | 38       | 52.7  | 7.55                  |                      | Nisbet.....             |                               |          |       | 4.87                  | 2.2                  |
| Pataskala.....             | 65                            | 22       | 43.8  | 1.68                  | 1.3                  | Kerby.....              | 64                            | 34       | 48.6  | 17.74                 |                      | Oil City.....           |                               |          |       | 2.31                  |                      |
| Perry.....                 |                               |          |       | 1.40                  |                      | Lafayette.....          | 64                            | 40       | 49.9  | 9.88                  |                      | Ottsville.....          |                               |          |       | 2.37                  |                      |
| Philo.....                 | 66                            | 18       | 44.2  | 1.10                  | T.                   | Lagrange.....           | 65                            | 27       | 45.6  | 2.76                  |                      | Parker.....             |                               |          |       | 3.20                  |                      |
| Plattsburg.....            | 66                            | 24       | 44.8  | 1.05                  | T.                   | Lakeview.....           | 58                            | 22       | 40.8  | 2.15                  |                      | Philadelphia.....       | 64                            | 29       | 45.9  | 2.93                  | T.                   |
| Pomeroy.....               | 69                            | 24       | 46.2  | 1.31                  | T.                   | Langlois.....           | 72                            | 36       | 55.7  | 23.42                 |                      | Point Pleasant.....     |                               |          |       | 2.52                  |                      |
| Portsmouth a.....          |                               |          |       | 1.64                  |                      | Lone Rock.....          | 65                            | 18       | 41.4  | 1.48                  |                      | Quakertown.....         | 61                            | 23       | 42.0  | 2.93                  | T.                   |
| Portsmouth b.....          | 72                            | 25       | 48.3  | 1.58                  |                      | McMinnville.....        | 67                            | 36       | 50.4  | 12.00                 |                      | Reading.....            |                               |          |       | 40.3                  | 2.76                 |
| Pulse.....                 |                               |          |       | 2.00                  | 3.0                  | Merlin.....             | 70                            | 40       | 51.3  | 9.74                  |                      | Renovo.....             |                               |          |       | 3.67                  | 0.2                  |
| Richwood.....              | 79                            | 22       | 45.0  | 1.77                  | T.                   | Monmouth a.....         | 69                            | 37       | 51.1  | 12.45                 |                      | Renovo.....             | 61                            | 18       | 40.5  | 3.93                  | 1.4                  |
| Ridgeville Corners.....    | 61                            | 22       | 43.0  | 2.03                  |                      | Monmouth.....           | 68                            | 35       | 50.4  | 10.93                 |                      | Saegerstown.....        | 65                            | 19       | 42.6  | 2.05                  |                      |
| Ripley.....                | 67                            | 22       | 46.4  | 1.86                  | T.                   | Monroe.....             | 70                            | 35       | 50.4  | 11.04                 |                      | St. Marys.....          | 54                            | 17       | 38.2  | 3.17                  |                      |
| Rittman.....               | 65                            | 23       | 43.6  | 2.14                  | T.                   | Mount Angel.....        | 64                            | 35       | 50.7  | 10.35                 |                      | Salem Corners.....      | 58                            | 20       | 38.5  | 2.90                  | 5.4                  |
| Rockyridge.....            | 65                            | 25       | 43.4  | 2.37                  |                      | Nehalem.....            |                               |          |       | 21.32                 |                      | Scranton.....           | 69                            | 20       | 39.8  | 2.11                  | 5.0                  |
| Rosewood.....              | 66                            | 25       | 43.4  | 1.60                  | T.                   | Newberg.....            | 68                            | 36       | 50.8  | 10.05                 |                      | Selinsgrove.....        | 64                            | 22       | 40.8  | 3.26                  | 0.5                  |
| Shenandoah.....            | 66                            | 23       | 42.4  | 1.74                  |                      | Newbridge.....          | 66                            | 17       | 40.8  | 1.21                  |                      | Shawmont.....           |                               |          |       | 2.32                  |                      |
| Sidney.....                | 64                            | 23       | 43.0  | 2.58                  | T.                   | Newport.....            | 69                            | 21       | 52.4  | 17.49                 |                      | Shinglehouse.....       | 56                            | 8        | 37.8  | 1.42                  | 1.0                  |
| Sinking Spring.....        | 66                            | 25       | 46.6  | 2.02                  | T.                   | Pendleton.....          | 72                            | 31       | 49.2  | 2.25                  |                      | Sinamahoning.....       |                               |          |       | 1.08                  |                      |
| Somerset.....              |                               |          |       | 2.61                  | T.                   | Placer.....             |                               |          |       | 12.25                 |                      | Smethport.....          | 57                            | 16       | 38.4  | 1.88                  |                      |
| Springboro.....            |                               |          |       | 1.64                  | T                    |                         |                               |          |       |                       |                      |                         |                               |          |       |                       |                      |

TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.                   | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|-----------------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                             | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| <b>Rhode Island—Cont'd.</b> | °                             | °        | °     | Ins.                  | Ins.                 |
| Providence                  | 65                            | 25       | 42.4  | 2.37                  | T.                   |
| Providence                  | 65                            | 25       | 41.3  | 2.25                  | T.                   |
| <b>South Carolina.</b>      |                               |          |       |                       |                      |
| Allendale                   | 77                            | 34       | 57.8  | 3.21                  |                      |
| Anderson                    | 82                            | 34       | 54.4  | 1.67                  |                      |
| Batesburg                   | 83                            | 42       | 61.6  | 3.28                  |                      |
| Beaufort                    | 80                            | 33       | 56.8  | 2.53                  |                      |
| Calhoun Falls               |                               |          |       | 1.68                  |                      |
| Camden                      |                               |          |       | 2.50                  |                      |
| Cheraw                      | 71                            | 32       | 53.8  | 2.28                  |                      |
| Cheraw                      | 74                            | 27       | 52.0  | 2.29                  |                      |
| Clemson College             |                               |          |       | 2.35                  |                      |
| Conway                      |                               |          |       | 1.67                  |                      |
| Darlington                  |                               |          |       | 2.47                  |                      |
| Edisto                      |                               |          |       | 1.98                  |                      |
| Ervingham                   | 78                            | 33       | 54.4  | 0.72                  |                      |
| Florence                    |                               |          |       | 2.08                  |                      |
| Gaffney                     | 81                            | 33       | 57.1  | 2.35                  |                      |
| Gillisonville               | 76                            | 30       | 51.4  | 1.57                  |                      |
| Greenville                  | 74                            | 32       | 52.2  | 1.91                  |                      |
| Greenwood                   | 74                            | 32       | 51.2  | 4.42                  |                      |
| Holland                     | 77                            | 33       | 53.9  | 3.65                  |                      |
| Kingstree                   |                               |          |       | 3.68                  |                      |
| Kingstree                   | 76                            | 33       | 55.2  | 1.95                  |                      |
| Little Mountain             | 78                            | 30       | 53.8  | 1.86                  |                      |
| Longshore                   | 75                            | 38       | 55.5  | 1.78                  |                      |
| Pinopolis                   | 78                            | 36       | 55.3  | 3.01                  |                      |
| St. Georges                 | 84                            | 35       | 56.3  | 2.90                  |                      |
| St. Matthews                |                               |          |       | 2.19                  |                      |
| St. Stephens                | 78                            | 28       | 52.0  | 2.32                  |                      |
| Santuck                     | 80                            | 29       | 52.6  | 2.75                  |                      |
| Shaws Fork                  |                               |          |       | 1.87                  |                      |
| Smiths Mills                | 75                            | 36       | 53.8  | 1.89                  |                      |
| Society Hill                | 77                            | 32       | 50.2  | 1.18                  |                      |
| Spartanburg                 | 81                            | 36       | 56.8  | 2.08                  |                      |
| Statesburg                  | 80                            | 36       | 56.8  | 2.15                  |                      |
| Summerville                 | 84                            | 31       | 53.9  | 2.23                  |                      |
| Temperance                  | 79                            | 39       | 57.0  | 2.59                  |                      |
| Trenton                     | 79                            | 30       | 55.7  | 2.03                  |                      |
| Trion                       | 75                            | 27       | 51.2  | 2.40                  |                      |
| Walhalla                    | 70                            | 31       | 52.8  | 1.73                  |                      |
| Winnaboro                   | 79                            | 34       | 57.0  | 2.27                  |                      |
| Yemassee                    | 75                            | 34       | 55.0  | 2.60                  |                      |
| <b>South Dakota.</b>        |                               |          |       |                       |                      |
| Aberdeen                    | 60                            | 10       | 35.3  | 0.12                  | T.                   |
| Academy                     | 69                            | 10       | 42.5  | 0.57                  | 1.0                  |
| Alexandria                  | 76                            | 9        | 43.0  | 0.68                  | T.                   |
| Armour                      | 70                            | 10       | 40.4  | 0.95                  | 0.5                  |
| Ashcroft                    | 68                            | 10       | 40.4  | 0.07                  | 0.5                  |
| Bowdle                      | 71                            | 5        | 37.2  | 1.10                  | 1.0                  |
| Brookings                   | 68                            | 9        | 39.3  | 0.42                  | 0.1                  |
| Canton                      | 64                            | 19       | 41.2  | 0.15                  |                      |
| Centerville                 |                               |          |       | 0.68                  |                      |
| Chamberlain                 | 69                            | 8        | 45.1  | 0.04                  | T.                   |
| Clark                       |                               |          |       | 0.05                  |                      |
| Desmet                      | 67                            | 14       | 40.0  | 0.65                  | T.                   |
| Doland                      | 65                            | 8        | 39.5  | 0.15                  | T.                   |
| Elkpoint                    | 71                            | 13       | 44.2  | 0.30                  |                      |
| Farmington                  |                               |          |       | 0.42                  | T.                   |
| Flanndreau                  | 64                            | 12       | 41.4  | 0.54                  | T.                   |
| Forestburg                  | 67                            | 10       | 41.0  | 0.16                  | T.                   |
| Forest City                 | 67                            | 12       | 39.2  | 0.00                  |                      |
| Fort Meade                  | 71                            | 13       | 41.4  | 0.14                  | T.                   |
| Gannaway                    | 66                            | 10       | 41.0  | 0.40                  | 2.0                  |
| Gary                        | 70                            | 19       | 40.8  | 0.80                  |                      |
| Grand River School          | 69                            | 6        | 37.9  | 0.79                  |                      |
| Greenwood                   | 71                            | 12       | 44.5  | 0.94                  | 0.2                  |
| Hartman                     | 69                            | 11       | 42.0  | 0.42                  | T.                   |
| Highmore                    | 66                            | 14       | 39.6  | 0.03                  | T.                   |
| Hitchcock                   |                               |          |       | 0.15                  |                      |
| Hotchkiss                   | 68                            |          |       | 0.37                  |                      |
| Hotchkiss                   | 70                            | 12       | 39.2  | 0.00                  |                      |
| Howard                      | 74                            | 9        | 40.2  | 0.19                  | T.                   |
| Interior                    | 70                            | 11       | 40.2  |                       |                      |
| Ipswich                     | 64                            | 10       | 37.8  | 0.38                  | 1.0                  |
| Kimball                     | 65                            | 12       | 42.0  | 0.49                  | 1.0                  |
| Leola                       | 66                            | 10       | 39.8  | 0.68                  | 4.0                  |
| Leslie                      | 67                            | 5        | 38.6  | 0.06                  |                      |
| Mellette                    | 65                            | 6        | 38.4  | 0.11                  | T.                   |
| Menno                       | 70                            | 1        | 41.4  | 0.93                  |                      |
| Millbank                    | 70                            | 16       | 40.2  | 0.53                  | 2.0                  |
| Mitchell                    | 74                            | 9        | 42.5  | 0.41                  |                      |
| Oelrichs                    | 69                            | 12       | 40.9  | 0.35                  |                      |
| Parker                      |                               |          |       | 0.65                  | T.                   |
| Plankinton                  | 69                            | 10       | 40.8  | 0.42                  | T.                   |
| Redfield                    | 67                            | 7        | 40.6  | 0.10                  | T.                   |
| St. Lawrence                | 68                            | 10       | 41.5  | 0.06                  | T.                   |
| Silver City                 | 65                            | 7        | 35.0  | 0.08                  |                      |
| Sioux Falls                 |                               |          |       | 0.29                  | 2.0                  |
| Spearsburg                  | 68                            | 11       | 41.6  | 0.68                  | T.                   |
| Spearsburg                  | 68                            | 18       | 44.0  | 0.17                  | 0.2                  |
| Tyndall                     | 71                            | 16       | 42.6  | 1.52                  | T.                   |
| Watertown                   | 67                            | 8        | 38.9  | 0.53                  |                      |
| Waubay                      | 65                            | 10       | 38.9  | 0.47                  |                      |
| <b>South Dakota—Cont'd.</b> | °                             | °        | °     | Ins.                  | Ins.                 |
| Wentworth                   | 65                            | 11       | 41.6  | 0.61                  |                      |
| Wessington Springs          |                               |          |       | 0.39                  |                      |
| Wolsey                      |                               |          |       | 0.03                  | T.                   |
| <b>Tennessee.</b>           |                               |          |       |                       |                      |
| Andersonville               | 71                            | 23       | 50.6  | 2.00                  |                      |
| Ashwood                     | 73                            | 26       | 52.8  | 1.86                  |                      |
| Benton                      | 73                            | 21       | 50.6  | 1.64                  |                      |
| Bluff City                  |                               |          |       | 1.65                  |                      |
| Bolivar                     | 77                            | 25       | 53.7  | 2.61                  | T.                   |
| Bristol                     | 68                            | 22       | 46.4  | 1.28                  |                      |
| Byrdstown                   | 71                            | 24       | 50.8  | 1.63                  | T.                   |
| Carthage                    | 76                            | 30       | 54.0  | 1.93                  | T.                   |
| Charleston                  |                               |          |       | 1.70                  |                      |
| Clarksburg                  | 75                            | 27       | 52.4  | 1.50                  | T.                   |
| Clinton                     |                               |          |       | 1.14                  |                      |
| Decatur                     | 71                            | 24       | 50.5  | 2.28                  |                      |
| Dover                       | 74                            | 23       | 50.8  | 2.16                  | T.                   |
| Elizabethton                | 71                            | 24       | 51.2  | 1.88                  | T.                   |
| Erasmus                     | 73                            |          |       | 1.87                  | T.                   |
| Florence                    | 74                            | 24       | 51.6  | 1.03                  | T.                   |
| Franklin                    | 73                            | 25       | 51.6  | 1.21                  | T.                   |
| Grace                       |                               |          |       | 2.60                  |                      |
| Greenville                  | 69                            | 23       | 48.8  | 1.44                  |                      |
| Harriman                    | 70                            | 26       | 49.8  | 1.91                  | T.                   |
| Hohenwald                   | 73                            | 19       | 51.2  | 2.28                  |                      |
| Iron City                   | 74                            | 20       | 51.7  | 3.36                  |                      |
| Jackson                     | 75                            | 25       | 53.6  | 2.25                  |                      |
| Johnsonville                | 78                            | 20       | 51.8  | 1.84                  |                      |
| Jonesboro                   | 67                            | 26       | 45.8  | 2.75                  |                      |
| Kingston                    |                               |          |       | 2.08                  |                      |
| Lafayette                   | 78                            | 28       | 51.4  | 1.65                  | T.                   |
| Lewisburg                   | 76                            | 24       | 52.3  | 2.04                  | T.                   |
| Liberty                     | 73                            | 24       | 51.8  | 1.07                  |                      |
| Lynnville                   | 73                            | 27       | 53.1  | 2.20                  | T.                   |
| McMinnville                 | 77                            | 25       | 52.8  | 2.70                  |                      |
| Madison                     | 82                            | 23       | 52.0  | 1.55                  | T.                   |
| Maryville                   | 71                            | 26       | 51.0  | 2.31                  |                      |
| Nunnally                    | 80                            | 19       | 52.4  | 2.74                  |                      |
| Oakhill                     | 76                            | 25       | 51.0  | 3.02                  |                      |
| Palmetto                    | 78                            | 25       | 53.2  | 1.94                  |                      |
| Perryville                  | 78                            | 25       | 55.8  | 1.45                  |                      |
| Pope                        | 76                            | 19       | 51.3  | 2.91                  | T.                   |
| Rogersville                 | 67                            | 25       | 49.0  | 1.40                  |                      |
| Rugby                       | 69                            | 18       | 48.1  | 1.79                  | T.                   |
| Savannah                    | 75                            | 23       | 53.6  | 2.21                  |                      |
| Sewanee                     | 70                            | 26       | 51.4  | 4.59                  | T.                   |
| Silverlake                  | 64                            | 20       | 44.8  | 1.08                  | T.                   |
| Springdale                  | 74                            | 20       | 50.2  | 2.43                  |                      |
| Springfield                 | 73                            | 21       | 51.5  | 2.80                  | T.                   |
| Tazewell                    |                               |          |       | 2.29                  |                      |
| Tellico Plains              | 76                            | 24       | 51.5  | 1.50                  | T.                   |
| Tracy City                  | 70                            | 21       | 48.8  | 4.32                  |                      |
| Trenton                     | 77                            | 23       | 52.6  | 2.91                  |                      |
| Tullahoma                   | 76                            | 20       | 51.0  | 2.70                  | T.                   |
| Union City                  | 76                            | 24       | 53.4  | 0.70                  |                      |
| Waynesboro                  | 74                            | 22       | 52.6  | 2.24                  |                      |
| Wildersville                | 74                            | 25       | 54.0  | 3.52                  |                      |
| Yukon                       | 75                            | 27       | 53.8  | 2.86                  |                      |
| <b>Texas.</b>               |                               |          |       |                       |                      |
| Alvin                       |                               |          |       | 3.50                  |                      |
| Anna                        | 83                            | 23       | 57.3  | 2.90                  |                      |
| Anson                       |                               |          |       | 2.60                  |                      |
| Arthur                      |                               |          |       | 1.82                  | T.                   |
| Austin                      | 82                            | 28       | 58.6  | 2.90                  |                      |
| Austin                      | 82                            | 29       | 58.9  |                       |                      |
| Balling                     | 87                            | 23       | 55.1  | 3.56                  |                      |
| Beaumont                    | 85                            | 35       | 60.9  | 1.00                  |                      |
| Beeville                    | 86                            | 32       | 61.4  | 3.70                  |                      |
| Blanco                      | 84                            | 30       | 57.5  | 2.70                  |                      |
| Boerne                      | 79                            | 31       | 56.8  | 2.59                  |                      |
| Brazoria                    | 84                            | 36       | 61.9  | 3.00                  |                      |
| Brenham                     | 84                            | 32       | 61.0  | 3.09                  |                      |
| Brighton                    | 81                            | 39       | 66.4  | 2.47                  |                      |
| Brownwood                   | 79                            | 26       | 54.6  | 3.15                  |                      |
| Burnet                      | 77                            | 29       | 57.4  | 2.89                  |                      |
| Camp Eagle Pass             | 82                            | 32       | 60.4  | 2.50                  |                      |
| Coleman                     | 79                            | 31       | 56.5  | 2.63                  |                      |
| Colorado                    |                               |          |       | 0.71                  |                      |
| Columbia                    | 84                            | 34       | 60.5  | 2.34                  |                      |
| Corsicana                   | 87                            | 31       | 58.0  | 2.55                  |                      |
| Cuero                       | 86                            | 32       | 61.4  | 3.41                  |                      |
| Dallas                      | 83                            | 27       | 57.0  | 3.11                  |                      |
| Danevang                    | 86                            | 32       | 62.2  | 2.63                  |                      |
| Dublin                      | 77                            | 27       | 55.4  | 3.65                  |                      |
| Duval                       | 83                            | 31       | 60.6  | 2.78                  |                      |
| Emory                       | 84                            | 26       | 58.8  | 1.29                  |                      |
| Estelle                     | 84                            | 27       | 58.0  | 4.16                  |                      |
| Forestburg                  |                               |          |       | 6.54                  |                      |
| Fort Brown                  | 85                            |          |       | 3.42                  |                      |
| Fort Clark                  |                               |          |       | 1.67                  |                      |
| Fort McIntosh               | 85                            | 38       | 65.6  | 1.61                  |                      |
| Fort Ringgold               | 85                            | 34       | 64.8  |                       | T.                   |
| Fort Stockton               |                               |          |       | 1.20                  |                      |
| Fredericksburg              | 82                            | 28       | 57.3  | 2.02                  |                      |
| Fruitland                   | 81                            | 24       | 56.8  | 6.01                  |                      |
| Gainesville                 | 87                            | 26       | 54.2  | 3.88                  |                      |
| <b>Texas—Cont'd.</b>        | °                             | °        | °     | Ins.                  | Ins.                 |
| Georgetown                  | 83                            | 28       | 55.8  | 2.70                  |                      |
| Grapevine                   | 84                            | 23       | 54.2  | 5.33                  |                      |
| Hale Center                 | 79                            | 23       | 54.2  | 3.05                  | T.                   |
| Hallettsville               | 84                            | 33       | 61.1  | 3.57                  |                      |
| Hearne                      | 82                            | 32       | 61.2  | 2.15                  |                      |
| Henrietta                   | 82                            | 35       | 54.5  | 4.60                  |                      |
| Hewitt                      |                               |          |       | 3.65                  |                      |
| Hondo                       |                               |          |       | 1.92                  |                      |
| Houston                     | 83                            | 36       | 61.0  | 2.61                  |                      |
| Hulen                       | 90                            | 33       | 62.0  | 3.74                  |                      |
| Jacksonville                | 84                            | 26       | 58.8  | 3.03                  |                      |
| Jasper                      | 87                            | 27       | 59.4  | 2.30                  |                      |
| Kent                        |                               |          |       | 3.52                  |                      |
| Kerrville                   | 80                            | 24       | 55.8  | 3.41                  |                      |
| Lampasas                    | 83                            | 25       | 56.4  | 2.76                  |                      |
| Lapara                      |                               |          |       | 1.58                  |                      |
| Laureles Ranch              |                               |          |       | 3.00                  |                      |
| Llano                       | 80                            | 30       | 58.8  | 1.95                  |                      |
| Longview                    | 82                            | 29       | 58.3  | 1.86                  |                      |
| Luling                      | 85                            | 32       | 60.5  | 2.74                  |                      |
| Mann                        | 84                            | 27       | 58.3  | 4.81                  |                      |
| Marathon                    | 80                            |          |       | 0.88                  |                      |
| Menardville                 |                               |          |       | 4.71                  |                      |
| Monahans                    |                               |          |       | 1.24                  |                      |
| Mount Blanco                | 82                            | 17       | 51.7  | 1.13                  | T.                   |
| New Braunfels               | 81                            | 34       | 58.6  | 2.89                  |                      |
| Panther                     |                               |          |       | 3.28                  |                      |
| Point Isabel                | 82                            | 52       | 68.5  |                       |                      |
| Rhineland                   | 81                            | 24       | 55.1  | 5.39                  |                      |
| Rockisland                  | 85                            | 32       | 61.2  | 2.77                  |                      |
| Rockport                    | 79                            | 40       | 66.4  |                       |                      |
| Runge                       | 85                            | 33       | 63.1  | 3.46                  |                      |
| Sabine                      |                               |          |       | 3.37                  |                      |
| San Antonio                 | 84                            | 34       | 62.0  | 1.69                  |                      |
| Sanderson                   | 80                            | 29       | 59.0  | 0.60                  |                      |
| San Marcos                  | 84                            | 30       | 59.4  | 2.10                  |                      |
| Sugarland                   | 88                            | 30       | 61.2  | 2.50                  |                      |
| Sulphur Springs             | 82                            | 29       | 58.4  | 1.56                  |                      |
| Temple                      | 82                            | 29       | 59.3  | 2.40                  |                      |
| Temple                      | 83                            | 25       | 58.3  | 2.12                  |                      |
| Tulia                       | 81                            | 18       | 47.4  | 2.40                  | 1.0                  |
| Valentine                   | 80                            |          |       | 1.15                  |                      |
| Victoria                    |                               |          |       | 3.58                  |                      |
| Waco                        | 84                            | 31       | 59.6  | 2.00                  |                      |
| Waxahachie                  | 82                            | 24       | 56.7  | 2.90                  |                      |
| Weatherford                 | 79                            | 26       | 56.6  | 3.32                  |                      |
| Wichita Falls               |                               |          |       | 6.70                  |                      |
| <b>Utah.</b>                |                               |          |       |                       |                      |
| Alpine                      |                               |          |       | 1.32                  |                      |
| Bluecreek                   | 65                            | 23       | 38.8  | 0.72                  |                      |
| Brigham                     |                               |          |       | 1.72                  |                      |
| Castledale                  | 61                            | 17       | 40.2  | 0.45                  |                      |
| Cisco                       | 65                            | 12       | 40.4  | T.                    |                      |
| Corinne                     | 70                            | 24       | 46.4  | 0.85                  |                      |
| Croydon                     | 82                            | 16       | 45.1  | 2.30                  | T.                   |
| Deseret                     | 67                            | 17       | 41.0  | 0.34                  |                      |
| Elgin                       | 81                            | 18       | 45.0  | 0.23                  |                      |
| Fillmore                    | 70                            | 19       | 41.5  | 1.06                  |                      |
| Fish Springs                |                               |          |       | 0.37                  |                      |
| Fort Duchesne               | 61                            | 11       | 36.6  | 0.77                  |                      |
| Frisco                      | 68                            | 23       | 43.8  | 0.28                  |                      |
| Giles                       | 67                            | 12       | 40.0  | 0.23                  |                      |
| Grover                      | 59                            | 9        | 36.6  | 0.40                  | 4.0                  |



TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.            | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations                | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.                   | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      |
|----------------------|-------------------------------|----------|-------|-----------------------|----------------------|-------------------------|-------------------------------|----------|-------|-----------------------|----------------------|-----------------------------|-------------------------------|----------|-------|-----------------------|----------------------|
|                      | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                         | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                             | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |
| Vermont—Cont'd.      |                               |          |       |                       |                      | Washington—Cont'd.      |                               |          |       |                       |                      | Wisconsin—Cont'd.           |                               |          |       |                       |                      |
| Burlington.....      | 54                            | 32       | 38.4  | 3.42                  | 4.0                  | Port Townsend.....      | 63                            | 41       | 51.8  | 3.25                  |                      | Pepin.....                  | 63                            | 19       | 39.8  | 1.30                  | 1.0                  |
| Chelsea.....         | 52                            | 13       | 32.1  | 1.95                  |                      | Pullman.....            | 60                            | 32       | 44.4  | 2.89                  |                      | Pine River.....             | 63                            | 17       | 40.8  | 0.93                  | T.                   |
| Cornwall.....        | 51                            | 13       | 35.4  | 2.48                  | 4.0                  | Ritzville.....          | 60                            | 32       | 44.4  | 1.58                  |                      | Portage.....                | 60                            | 20       | 40.2  | 0.64                  | T.                   |
| Derby.....           | 57                            | 6        | 32.2  | 4.22                  | 5.5                  | Rosalia.....            | 61                            | 32       | 44.6  | 3.90                  | 2.0                  | Port Washington.....        | 65                            | 22       | 41.2  | 0.55                  |                      |
| Enosburg Falls.....  | 58                            | 5        | 32.4  | 2.21                  |                      | Sedro.....              | 65                            | 40       | 51.0  | 10.08                 |                      | Prairie du Chien.....       | 69                            | 19       | 44.0  | 1.26                  |                      |
| Hartland.....        | 56                            | 5        | 33.0  | 1.67                  | 4.5                  | Shoalwater Bay *10..... | 67                            | 42       | 52.0  |                       |                      | Prentice *1.....            | 58                            | 18       | 34.8  | 1.13                  | 1.0                  |
| Jacksonville.....    | 60                            | 13       | 33.5  | 1.76                  | 1.0                  | Silvana.....            | 62                            | 36       | 48.8  | 6.93                  |                      | Racine.....                 | 68                            | 28       | 43.8  | 2.17                  |                      |
| Norwich.....         | 58                            | 7        | 33.0  | 1.48                  | 2.0                  | Snohomish.....          | 65                            | 39       | 50.6  | 8.86                  |                      | Sharon.....                 | 64                            | 26       | 41.6  | 3.64                  | T.                   |
| St. Johnsbury.....   | 53                            | 3        | 31.8  | 2.28                  | 7.5                  | Snoqualmie.....         |                               |          |       | 11.11                 |                      | Shawano.....                | 61                            | 17       | 39.2  | 0.38                  | 0.2                  |
| Vernon *6.....       | 55                            | 15       | 35.7  | 1.79                  | 1.0                  | Southbend.....          | 70                            | 40       | 52.4  | 20.33                 |                      | Sheboygan.....              | 60                            | 26       | 42.4  | 0.82                  | T.                   |
| Wells.....           | 50                            | 10       | 34.4  | 1.68                  | 2.0                  | Sunnyside.....          | 68                            | 29       | 46.6  | 1.84                  |                      | Spooner.....                | 69                            | 22       | 42.8  | 1.53                  |                      |
| Woodstock.....       | 52                            | 4        | 32.4  | 1.49                  | 3.0                  | Twin.....               | 60                            | 38       | 48.5  | 19.32                 |                      | Stevens Point.....          | 63                            | 14       | 39.4  | 1.28                  |                      |
| Virginia.            |                               |          |       |                       |                      | Union.....              | 61                            | 35       | 50.0  | 25.07                 |                      | Sturgeon Bay Canal *10..... | 55                            | 25       | 40.0  |                       |                      |
| Alexandria.....      | 71                            | 26       | 46.6  | 1.76                  | T.                   | Usk.....                | 61                            | 25       | 42.5  |                       |                      | Two Rivers *10.....         | 56                            | 26       | 42.5  |                       |                      |
| Ashland.....         | 75                            | 24       | 48.2  | 1.57                  |                      | Vancouver.....          | 68                            | 35       | 51.4  | 9.07                  |                      | Valley Junction.....        | 64                            | 10       | 39.8  | 0.61                  | T.                   |
| Barboursville.....   | 81                            | 23       | 43.7  | 1.55                  |                      | Vashon.....             | 61                            | 40       | 49.7  | 10.25                 |                      | Viroqua.....                | 65                            | 19       | 41.7  | 1.74                  | 0.2                  |
| Bedford.....         | 69                            | 28       | 45.4  | 0.69                  |                      | Waterville.....         | 56                            | 26       | 40.0  | 2.92                  | 2.0                  | Watertown.....              | 67                            | 21       | 39.8  | 0.67                  | T.                   |
| Bigstone Gap.....    | 70                            | 22       | 48.6  | 1.40                  | T.                   | Wenatchee (near).....   | 56                            | 29       | 41.9  | 2.88                  |                      | Waukesha.....               | 61                            | 26       | 41.8  | 2.20                  |                      |
| Birdsne *1.....      | 73                            | 31       | 50.3  | 1.60                  |                      | West Virginia.          |                               |          |       |                       |                      | Waupaca.....                | 61                            | 17       | 40.3  | 1.29                  | 0.8                  |
| Blacksburg.....      | 73                            | 19       | 49.0  | 1.21                  |                      | Beckley.....            | 65                            | 20       | 43.0  |                       |                      | Wausau.....                 | 58                            | 17       | 38.0  | 0.58                  | 0.5                  |
| Burkes Garden.....   | 62                            | 16       | 43.8  | 1.42                  |                      | Beverly.....            | 70                            | 16       | 44.2  | 1.47                  | 0.1                  | Westbend.....               | 72                            | 22       | 43.9  | 0.38                  | T.                   |
| Callville.....       | 72                            | 26       | 48.2  | 1.00                  |                      | Bluefield.....          | 66                            | 24       | 46.2  | 1.08                  |                      | Westfield.....              | 60                            | 20       | 39.7  | 0.28                  |                      |
| Charlottesville..... | 71                            | 30       | 51.0  | 1.00                  | T.                   | Buckhannon.....         | 68                            | 19       | 42.6  |                       |                      | Whitehall.....              | 64                            | 15       | 33.4  | 1.09                  | 0.5                  |
| Christiansburg.....  |                               |          |       | 2.42                  |                      | Burlington.....         | 69                            | 18       | 43.5  |                       |                      | Wyoming.                    |                               |          |       |                       |                      |
| Clifton Forge.....   | 66                            | 25       | 43.6  | 0.38                  |                      | Central.....            | 69                            | 18       | 44.9  | 1.57                  | T.                   | Alcova.....                 | 67                            | 8        | 36.6  |                       | T.                   |
| Columbia.....        | 67                            | 21       | 42.6  | 0.50                  |                      | Charleston.....         |                               |          |       | 2.15                  |                      | Basin.....                  | 62                            | 4        | 33.7  | 0.00                  |                      |
| Dale Enterprise..... | 78                            | 18       | 43.9  | 0.91                  |                      | Dayton.....             | 70                            | 14       | 45.1  | 2.79                  | T.                   | Bigpiny.....                | 46                            | 4        | 29.8  | 0.06                  | 0.5                  |
| Dwale.....           |                               |          |       | 2.52                  |                      | Eastbank.....           | 68                            | 28       | 46.4  | 2.00                  |                      | Bitter Creek.....           | 75                            | 4        | 39.6  |                       | T.                   |
| Farmville.....       | 79                            | 24       | 48.4  | 1.95                  |                      | Elkhorn.....            | 68                            | 26       | 48.0  | 0.88                  |                      | Buffalo.....                | 73                            | 10       | 40.6  | 0.10                  | 0.5                  |
| Fontella.....        | 75                            | 27       | 51.8  | 1.27                  |                      | Fairmont.....           |                               |          |       | 3.18                  |                      | Burlington.....             | 80                            | 10       | 38.5  | 0.00                  |                      |
| Fredericksburg.....  | 72                            | 25       | 46.0  | 1.59                  |                      | Glenville.....          | 69                            | 20       | 45.8  | 1.97                  |                      | Burns.....                  | 48                            | 1        | 28.6  |                       | T.                   |
| Graham Forge.....    | 67                            | 20       | 44.2  | 0.77                  |                      | Grafton.....            | 66                            | 21       | 45.6  | 3.34                  |                      | Centennial.....             | 59                            | 12       | 35.2  | 0.02                  | T.                   |
| Hampton.....         | 70                            | 36       | 52.6  | 0.50                  |                      | Green Sulphur.....      | 68                            | 22       | 46.2  | 0.74                  |                      | Cody.....                   | 65                            | 17       | 40.6  | 0.00                  |                      |
| Hot Springs.....     | 77                            | 29       | 44.2  | 0.61                  |                      | Hamlin.....             |                               |          |       | 1.47                  |                      | Dome Lake.....              | 50                            | 18       | 34.1  |                       |                      |
| Lexington.....       | 72                            | 24       | 46.5  | 0.50                  |                      | Harpers Ferry.....      |                               |          |       | 3.06                  |                      | Douglas.....                | 64                            | 12       | 39.0  |                       |                      |
| Manassas.....        | 70                            | 24       | 45.0  | 1.28                  |                      | Hinton.....             |                               |          |       | 1.27                  |                      | Embar.....                  | 65                            | 17       | 40.3  |                       |                      |
| Marion.....          | 68                            | 21       | 46.8  | 1.45                  |                      | Hinton.....             | 67                            | 27       | 46.7  |                       |                      | Evanson.....                | 59                            | 11       | 33.7  | 0.89                  | 8.0                  |
| Meadow Dale.....     | 66                            | 21       | 42.7  |                       |                      | Huntington.....         | 71                            | 26       | 46.9  | 1.35                  |                      | Fort Laramie.....           | 68                            | 11       | 41.0  | 0.12                  |                      |
| Miller School.....   |                               |          |       | 2.96                  |                      | Kingwood.....           | 62                            | 18       | 43.8  | 3.22                  | 1.0                  | Fort Washakie.....          | 61                            | 11       | 38.1  | 0.00                  |                      |
| Newport News.....    | 71                            | 34       | 53.2  | 0.88                  |                      | Marlinton.....          | 66                            | 16       | 41.4  | 0.83                  | T.                   | Fort Yellowstone.....       | 57                            | 12       | 35.6  | 0.04                  | 0.4                  |
| Petersburg.....      | 76                            | 27       | 49.8  | 1.26                  |                      | Martinsburg.....        | 70                            | 23       | 43.6  | 2.15                  |                      | Fourbear.....               | 64                            | 1        | 38.0  |                       | T.                   |
| Quantico.....        | 70                            | 18       | 43.2  |                       |                      | Morgantown.....         | 70                            | 18       | 46.1  | 1.08                  |                      | Hyattville.....             | 65                            | 16       | 40.2  | 0.00                  |                      |
| Radford.....         |                               |          |       | 1.69                  |                      | New Cumberland.....     | 68                            | 24       | 45.2  | 2.58                  |                      | Iron Mountain.....          | 63                            | 7        | 38.8  | 0.12                  |                      |
| Richmond (near)..... | 73                            | 27       | 48.1  | 0.86                  |                      | New Martinsville.....   | 68                            | 25       | 47.2  | 2.55                  |                      | Jackson.....                | 49                            | 4        | 28.2  |                       | T.                   |
| Rocky Mount.....     | 83                            | 25       | 51.0  | 2.45                  |                      | Nuttallburg.....        | 69                            | 22       | 48.1  | 1.86                  | T.                   | Laramie.....                | 59                            | 9        | 35.6  | 0.07                  | 0.8                  |
| Salem.....           | 75                            | 30       | 52.0  | 1.24                  |                      | Oceana.....             | 69                            | 22       | 47.4  | 1.32                  |                      | Lovell.....                 | 60                            | 4        | 35.7  | 0.02                  |                      |
| Scottsburg.....      | 73                            | 26       | 48.9  | 1.84                  |                      | Oldfields.....          | 71                            | 17       | 42.6  | 0.48                  |                      | Lusk.....                   | 61                            | 6        | 36.2  | 0.06                  |                      |
| Spears Ferry.....    |                               |          |       | 1.80                  |                      | Parsons.....            | 68                            | 17       | 44.0  | 1.75                  | T.                   | Rawlins.....                | 56                            | 15       | 35.7  | 0.91                  |                      |
| Spottsville.....     | 74                            | 26       | 48.6  | 1.11                  |                      | Philippi.....           | 70                            | 20       | 45.6  | 2.67                  | 0.5                  | Rocksprings.....            | 62                            | 0        | 28.6  |                       |                      |
| Standardsville.....  | 71                            | 25       | 47.2  | 1.52                  |                      | Philippi.....           |                               |          |       | 3.42                  |                      | Sheridan.....               | 68                            | 6        | 39.0  | 0.06                  | T.                   |
| Staunton.....        | 74                            | 24       | 48.2  | 0.90                  |                      | Point Pleasant.....     | 74                            | 25       | 47.2  | 1.63                  |                      | Thayne.....                 | 47                            | 17       | 34.8  | 0.83                  | 3.0                  |
| Stephens City.....   | 67                            | 22       | 45.0  | 0.86                  |                      | Powellton.....          | 69                            | 26       | 46.4  | 0.20                  |                      | Thermopolis.....            | 64                            | 7        | 38.0  | 0.08                  |                      |
| Sunbeam.....         | 74                            | 27       | 51.8  | 0.75                  |                      | Romney.....             | 68                            | 22       | 44.2  | 1.70                  |                      | Wamsutter.....              | 71                            | 10       | 39.5  | 0.00                  |                      |
| Tobaccoville.....    | 74                            | 24       | 49.6  | 0.80                  |                      | Rowlesburg.....         |                               |          |       | 3.49                  |                      | Cuba.                       |                               |          |       |                       |                      |
| Warrenton.....       | 66                            | 32       | 44.4  | 1.04                  |                      | Spencer.....            | 72                            | 21       | 48.2  | 1.19                  |                      | Aguacate.....               | 86                            | 55       | 72.8  | 1.53                  |                      |
| Warsaw.....          | 70                            | 22       | 46.4  | 1.38                  |                      | Wellsbury.....          | 66                            | 23       | 43.7  | 2.07                  | T.                   | Anstralia.....              | 87                            | 61       | 73.7  | 1.14                  |                      |
| Westbrook Farm.....  | 70                            | 26       | 49.2  |                       |                      | Weston.....             |                               |          |       | 2.76                  |                      | Banaguises.....             | 88                            | 59       | 72.8  | 0.72                  |                      |
| Woodstock.....       | 70                            | 21       | 45.0  | 0.88                  |                      | Weston.....             | 71                            | 21       | 46.7  |                       |                      | Batabano.....               | 94                            | 60       | 76.7  | 3.03                  |                      |
| Wytheville.....      | 72                            | 22       | 47.2  | 1.13                  |                      | Wheeling.....           |                               |          |       | 3.19                  | T.                   | Canajuan.....               | 86                            | 59       | 72.3  | 3.22                  |                      |
| Washington.          |                               |          |       |                       |                      | Wheeling.....           | 68                            | 29       | 47.6  | 2.21                  |                      | Cienfuegos.....             |                               |          |       | 2.48                  |                      |
| Aberdeen.....        | 65                            | 39       | 50.2  | 22.77                 |                      | Wisconsin.              |                               |          |       |                       |                      | Manzanillo.....             | 85                            | 68       | 77.1  | 11.30                 |                      |
| Anacortes.....       |                               |          |       | 5.39                  |                      | Amherst.....            | 61                            | 17       | 39.9  | 1.20                  | 4.0                  | Matanzas.....               | 87                            | 57       | 72.9  | 2.60                  |                      |
| Ashford.....         |                               |          |       | 13.20                 |                      | Antigo.....             | 65                            | 14       | 37.8  | 0.22                  | T.                   | Pinar del Rio.....          | 90                            | 60       | 74.5  | 3.55                  |                      |
| Bremerton.....       | 67                            | 30       | 50.6  | 14.44                 |                      | Bayfield.....           | 64                            | 26       | 41.5  | 0.30                  | T.                   | Providencia.....            | 87                            | 62       | 78.2  | 1.02                  |                      |
| Brinnon.....         | 62                            | 40       | 50.1  | 24.99                 |                      | Beloit.....             | 62                            | 24       | 42.5  | 2.26                  |                      | Sagua la Grande.....        | 90                            | 60       | 73.7  | 2.23                  |                      |
| Cedar Lake.....      |                               |          |       | 14.11                 |                      | Brookfield.....         | 66                            | 22       | 42.0  | 1.47                  |                      | Santa Clara.....            | 90                            | 51       | 71.2  | 2.95                  |                      |
| Cedonia.....         | 56                            | 27       | 40.6  | 4.66                  | 4.5                  | Butternut.....          | 60                            | 12       | 37.2  | 1.16                  | 1.0                  | Soledad.....                | 85                            | 63       | 73.8  | 2.25                  |                      |
| Centerville.....     | 62                            | 27       | 43.8  | 4.75                  |                      | Chilton.....            | 69                            | 20       | 40.4  | 0.30                  |                      | Union de Reyes.....         | 86                            | 65       | 76.2  | 0.47                  |                      |
| Chehalis.....        | 62                            | 35       | 50.4  | 11.25                 |                      | Citypoint.....          | 65                            | 16       | 40.0  | 1.53                  |                      | Puerto Rico.                |                               |          |       |                       |                      |
| Cheney.....          |                               |          |       | 3.22                  | 0.3                  | Delavan.....            | 63                            | 24       | 41.8  | 3.05                  | T.                   | Adjuntas.....               | 85                            | 55       | 71.2  | 7.95                  |                      |
| Clearwater.....      | 60                            | 37       | 50.2  | 28.73                 |                      | Dodgeville.....         | 64                            | 15       | 40.7  | 1.65                  | 1.0                  | Aguadilla.....              | 84                            | 73       | 77.7  | 9.88                  |                      |
| Cle Elum.....        | 54                            | 28       | 42.4  | 4.37                  | T.                   | Easton.....             | 61                            | 11       | 40.4  | 0.97                  | T.                   | Arecibo.....                | 89                            | 66       | 76.8  |                       |                      |
| Colfax.....          |                               |          |       | 4.48                  |                      | Eau Claire.....         | 62                            | 18</     |       |                       |                      |                             |                               |          |       |                       |                      |

TABLE II.—Climatological record of voluntary and other cooperating observers—Continued.

| Stations.                              | Temperature.<br>(Fahrenheit.) |          |       | Precipitation.        |                      | Stations.                       | Temperature.<br>(Fahrenheit.) |                 |                   | Precipitation.        |                      | EXPLANATION OF SIGNS.  |
|--|-------------------------------|----------|-------|-----------------------|----------------------|---------------------------------|-------------------------------|-----------------|-------------------|-----------------------|----------------------|--|
|  | Maximum.                      | Minimum. | Mean. | Rain and melted snow. | Total depth of snow. |                                 | Maximum.                      | Minimum.        | Mean.             | Rain and melted snow. | Total depth of snow. |  |
| <i>Mexico.</i>                         | °                             | °        | °     | <i>Ins.</i>           | <i>Ins.</i>          | <i>Colorado.</i>                | °                             | °               | °                 | <i>Ins.</i>           | <i>Ins.</i>          | <p>* Extremes of temperature from observed readings of dry thermometer.</p> <p>A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:</p> <p><sup>1</sup> Mean of 7 a. m. + 2 p. m. + 9 p. m. + 4.</p> <p><sup>2</sup> Mean of 8 a. m. + 8 p. m. + 2.</p> <p><sup>3</sup> Mean of 7 a. m. + 7 p. m. + 2.</p> <p><sup>4</sup> Mean of 6 a. m. + 6 p. m. + 2.</p> <p><sup>5</sup> Mean of 7 a. m. + 2 p. m. + 2.</p> <p><sup>6</sup> Mean of readings at various hours reduced to true daily mean by special tables.</p> <p><sup>7</sup> Mean from hourly readings of thermograph.</p> <p><sup>8</sup> Mean of sunrise and noon.</p> <p><sup>10</sup> Mean of sunrise, noon, sunset, and midnight.</p> <p>The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.</p> <p>An italic letter following the name of a station, as "Livingston <i>a</i>," "Livingston <i>b</i>," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "a" denotes 14 days missing.</p> <p>No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.</p> <p>CORRECTION.</p> <p>The following changes have been made in the names of stations:</p> <p>New Mexico, Eddy, changed to Carlsbad.</p> |
| Ciudad P. Diaz.....                    | 78                            | 40       | 62.2  | 2.42                  |                      | Pagoda.....                     |                               |                 |                   | 5.25                  |                      |  |
| Coatzacoalcas <sup>2</sup> .....       |                               |          | 75.6  |                       |                      | Wallet.....                     |                               |                 |                   | T.                    |                      |  |
| Leon de Aldamas.....                   | 76                            | 34       | 58.3  | 0.14                  |                      | <i>Montana.</i>                 |                               |                 |                   |                       |                      |  |
| Tampico <sup>3</sup> .....             |                               |          | 70.4  |                       |                      | Adel.....                       | 73                            | -10             | 37.8              | 3.02                  | 28.0                 |  |
| Topolobampo* <sup>1</sup> .....        | 91                            | 51       | 69.1  | T.                    |                      | <i>New Hampshire.</i>           |                               |                 |                   |                       |                      |  |
| Vera Cruz <sup>5</sup> .....           |                               |          | 75.2  |                       |                      | Warner.....                     |                               |                 |                   | 1.63                  | T.                   |  |
| <i>New Brunswick.</i>                  |                               |          |       |                       |                      | <i>New Mexico.</i>              |                               |                 |                   |                       |                      |  |
| St. John.....                          | 89                            | 17       | 34.6  | 4.53                  | 13.3                 | Carlsbad.....                   |                               |                 |                   | 0.30                  |                      |  |
|  |                               |          |       |                       |                      | Mesilla Park.....               | 90                            |                 |                   | 0.03                  |                      |  |
| <i>Late reports for October, 1899.</i> |                               |          |       |                       |                      | <i>North Carolina.</i>          |                               |                 |                   |                       |                      | <p>The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.</p> <p>An italic letter following the name of a station, as "Livingston <i>a</i>," "Livingston <i>b</i>," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "a" denotes 14 days missing.</p> <p>No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.</p> <p>CORRECTION.</p> <p>The following changes have been made in the names of stations:</p> <p>New Mexico, Eddy, changed to Carlsbad.</p>  |
| <i>California.</i>                     |                               |          |       |                       |                      | Selma.....                      | 85 <sup>7</sup>               | 35 <sup>7</sup> | 61.4 <sup>7</sup> | 4.90                  |                      |  |
| Azusa.....                             |                               |          |       |                       | 3.68                 | <i>Ohio.</i>                    |                               |                 |                   |                       |                      |  |
| Claremont.....                         | 94                            | 36       | 60.0  | 1.64                  |                      | Bement.....                     |                               |                 |                   | 2.23                  |                      |  |
| Glendora.....                          |                               |          |       |                       | 1.94                 | Bladensburg.....                | 88                            | 22              | 54.4              |                       |                      |  |
| Hydesville.....                        |                               |          |       |                       | 4.95                 | Granville.....                  | 86                            | 23              | 56.7              | 1.94                  |                      |  |
| Lakeside.....                          |                               |          |       |                       | 0.57                 | Logan.....                      |                               |                 |                   | 2.87                  |                      |  |
| Placerville.....                       | 86                            | 30       | 52.2  | 7.73                  |                      | Youngstown.....                 |                               |                 |                   | 1.72                  |                      |  |
| San Miguel Island.....                 | 88                            | 48       | 61.0  | 1.40                  |                      | <i>Oregon.</i>                  |                               |                 |                   |                       |                      |  |
| Santa Paula.....                       | 101                           | 44       | 67.0  | 1.84                  |                      | Tillamook Rock.....             |                               |                 |                   | 4.32                  |                      |  |
| Yuba City* <sup>2</sup> .....          | 94                            | 44       | 62.6  | 4.42                  |                      | <i>Texas.</i>                   |                               |                 |                   |                       |                      |  |
|  |                               |          |       |                       |                      | Anson.....                      |                               |                 |                   | 3.00                  |                      | <p>The following changes have been made in the names of stations:</p> <p>New Mexico, Eddy, changed to Carlsbad.</p>  |
|  |                               |          |       |                       |                      | San Antonio.....                | 97                            | 46              | 74.2              | 1.42                  |                      |  |
|  |                               |          |       |                       |                      | <i>Mexico.</i>                  |                               |                 |                   |                       |                      | <p>The following changes have been made in the names of stations:</p> <p>New Mexico, Eddy, changed to Carlsbad.</p>  |
|  |                               |          |       |                       |                      | Topolobampo* <sup>1</sup> ..... | 94                            | 63              | 76.2              | 0.57                  |                      |  |



TABLE III.—Mean temperature for each hour of seventy-fifth meridian time, November, 1899.

| Stations.              | 1 a. m. | 2 a. m. | 3 a. m. | 4 a. m. | 5 a. m. | 6 a. m. | 7 a. m. | 8 a. m. | 9 a. m. | 10 a. m. | 11 a. m. | Noon. | 1 p. m. | 2 p. m. | 3 p. m. | 4 p. m. | 5 p. m. | 6 p. m. | 7 p. m. | 8 p. m. | 9 p. m. | 10 p. m. | 11 p. m. | Midn't. | Mean. |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|---------|-------|
| Bismarck, N. Dak....   | 33.4    | 32.7    | 31.8    | 31.0    | 30.5    | 29.5    | 29.5    | 29.2    | 28.8    | 29.6     | 32.8     | 37.4  | 41.1    | 44.1    | 46.5    | 47.9    | 48.3    | 46.3    | 42.4    | 39.6    | 37.6    | 36.7     | 35.8     | 34.7    | 35.6  |
| Boston, Mass.....      | 39.0    | 38.6    | 38.2    | 37.6    | 37.5    | 37.1    | 37.6    | 39.0    | 40.7    | 42.5     | 44.5     | 46.0  | 47.0    | 47.9    | 47.6    | 47.0    | 45.9    | 44.7    | 43.4    | 43.0    | 41.8    | 41.0     | 39.1     | 42.0    |       |
| Buffalo, N. Y.....     | 41.2    | 41.1    | 41.1    | 41.0    | 40.7    | 40.4    | 40.4    | 40.3    | 40.7    | 41.6     | 42.5     | 43.4  | 43.6    | 43.9    | 44.3    | 44.4    | 44.1    | 43.4    | 42.8    | 42.5    | 42.2    | 41.9     | 41.7     | 41.4    |       |
| Cedar City, Utah....   | 42.9    | 42.1    | 41.5    | 40.4    | 40.4    | 39.5    | 39.7    | 39.7    | 38.8    | 39.6     | 42.5     | 46.1  | 48.7    | 51.0    | 52.1    | 53.5    | 53.6    | 53.1    | 50.8    | 47.4    | 46.0    | 45.0     | 44.5     | 43.6    |       |
| Chicago, Ill.....      | 43.6    | 42.9    | 42.5    | 42.2    | 41.7    | 41.3    | 41.1    | 41.4    | 41.9    | 42.6     | 43.8     | 44.8  | 45.7    | 46.9    | 47.8    | 48.2    | 48.2    | 47.8    | 47.0    | 46.4    | 45.9    | 45.7     | 45.1     | 44.4    |       |
| Cincinnati, Ohio....   | 45.5    | 44.7    | 44.0    | 43.4    | 42.7    | 42.4    | 42.0    | 42.3    | 43.1    | 44.7     | 47.3     | 49.8  | 51.4    | 52.3    | 53.8    | 53.8    | 53.7    | 53.1    | 51.6    | 50.5    | 49.2    | 48.4     | 47.2     | 46.4    |       |
| Cleveland, Ohio....    | 42.6    | 42.2    | 41.9    | 41.4    | 41.1    | 41.0    | 41.0    | 41.2    | 41.3    | 42.4     | 43.9     | 45.3  | 46.3    | 47.0    | 47.4    | 47.0    | 46.8    | 46.2    | 45.6    | 45.0    | 44.1    | 43.8     | 43.3     | 42.6    |       |
| Detroit, Mich.....     | 41.1    | 40.8    | 40.3    | 40.1    | 39.7    | 39.4    | 39.1    | 39.4    | 39.8    | 41.1     | 42.6     | 44.4  | 45.2    | 46.3    | 46.8    | 46.7    | 46.3    | 45.5    | 44.2    | 43.3    | 42.7    | 42.3     | 42.1     | 41.7    |       |
| Eastport, Me.....      | 34.4    | 34.2    | 33.9    | 33.9    | 33.5    | 33.2    | 33.2    | 33.7    | 35.0    | 36.2     | 37.0     | 38.1  | 38.8    | 39.1    | 39.4    | 39.1    | 38.6    | 38.2    | 37.8    | 37.5    | 36.7    | 36.1     | 35.5     | 34.5    |       |
| Galveston, Tex.....    | 62.9    | 62.6    | 62.3    | 62.1    | 61.7    | 61.4    | 61.1    | 60.4    | 61.0    | 62.6     | 64.0     | 65.6  | 66.4    | 67.0    | 67.5    | 67.5    | 67.2    | 66.1    | 65.2    | 64.7    | 64.3    | 64.1     | 63.4     | 63.0    |       |
| Harve, Mont.....       | 35.7    | 35.6    | 34.4    | 33.2    | 33.7    | 33.5    | 33.4    | 33.3    | 32.7    | 32.3     | 33.8     | 37.1  | 41.7    | 44.8    | 48.7    | 50.6    | 51.7    | 51.1    | 47.3    | 43.1    | 40.8    | 39.6     | 37.9     |         |       |
| Independence, Cal..    | 48.9    | 47.8    | 46.8    | 46.4    | 45.2    | 44.8    | 43.6    | 43.0    | 41.9    | 40.9     | 42.3     | 46.3  | 50.0    | 53.7    | 56.4    | 58.0    | 59.0    | 59.3    | 57.7    | 55.1    | 52.8    | 51.5     | 50.5     |         |       |
| Kalispell, Mont.....   | 36.5    | 35.9    | 35.7    | 35.5    | 35.0    | 34.7    | 34.5    | 34.1    | 34.4    | 34.5     | 35.1     | 36.8  | 38.8    | 41.0    | 43.0    | 44.1    | 44.6    | 43.9    | 42.1    | 41.1    | 39.7    | 38.4     |          |         |       |
| Kansas City, Mo....    | 48.1    | 47.5    | 46.8    | 46.3    | 45.7    | 45.3    | 44.8    | 44.7    | 44.9    | 46.9     | 49.3     | 51.4  | 53.3    | 55.1    | 56.1    | 56.7    | 56.3    | 55.3    | 53.6    | 52.4    | 51.1    | 50.0     |          |         |       |
| Key West, Fla.....     | 72.9    | 72.7    | 72.7    | 72.6    | 72.4    | 72.4    | 72.6    | 73.2    | 74.3    | 75.1     | 75.9     | 76.3  | 76.6    | 76.4    | 76.4    | 76.0    | 75.5    | 74.9    | 74.4    | 74.3    | 73.8    | 73.5     |          |         |       |
| Marquette, Mich....    | 40.3    | 40.0    | 39.5    | 39.3    | 39.1    | 39.0    | 39.2    | 39.1    | 39.5    | 40.7     | 42.4     | 43.5  | 44.3    | 44.5    | 44.6    | 44.4    | 43.7    | 42.5    | 41.6    | 40.8    | 40.5    |          |          |         |       |
| Memphis, Tenn.....     | 53.5    | 52.5    | 51.6    | 50.5    | 49.9    | 49.5    | 49.3    | 49.5    | 51.3    | 54.1     | 56.7     | 59.3  | 61.3    | 62.4    | 63.2    | 63.7    | 63.3    | 61.9    | 60.6    | 59.5    | 57.5    |          |          |         |       |
| Mt. Tamalpais, Cal..   | 48.9    | 48.9    | 48.9    | 48.7    | 48.7    | 48.4    | 48.4    | 48.3    | 47.8    | 47.6     | 47.8     | 48.4  | 49.4    | 49.7    | 50.0    | 51.0    | 51.0    | 50.5    | 49.7    | 48.9    | 48.7    |          |          |         |       |
| New Orleans, La....    | 60.0    | 59.5    | 59.2    | 58.7    | 58.2    | 57.5    | 57.1    | 57.4    | 57.8    | 59.7     | 62.2     | 65.5  | 66.9    | 68.3    | 68.8    | 69.1    | 68.6    | 67.3    | 65.8    | 63.8    | 62.4    |          |          |         |       |
| New York, N. Y.....    | 43.0    | 42.4    | 42.4    | 41.9    | 41.9    | 41.7    | 41.7    | 42.1    | 42.6    | 44.5     | 46.8     | 47.6  | 48.7    | 50.1    | 50.3    | 50.1    | 48.9    | 48.0    | 47.0    | 46.4    | 45.1    |          |          |         |       |
| Philadelphia, Pa....   | 43.3    | 42.6    | 42.0    | 41.5    | 41.2    | 40.8    | 40.9    | 42.1    | 43.4    | 45.3     | 47.1     | 48.9  | 50.3    | 51.3    | 52.1    | 51.6    | 50.8    | 49.7    | 48.5    | 47.8    | 46.7    |          |          |         |       |
| Pittsburg, Pa.....     | 42.6    | 42.5    | 42.3    | 42.0    | 41.2    | 40.8    | 42.3    | 42.6    | 43.2    | 44.7     | 46.8     | 48.3  | 49.6    | 50.8    | 51.5    | 51.1    | 50.7    | 49.4    | 47.9    | 46.8    | 45.2    |          |          |         |       |
| Portland, Oreg.....    | 51.4    | 51.4    | 50.9    | 50.8    | 50.7    | 51.0    | 51.0    | 50.7    | 49.9    | 49.8     | 49.9     | 50.7  | 52.1    | 53.2    | 54.3    | 55.6    | 56.1    | 56.1    | 55.5    | 54.4    | 53.5    |          |          |         |       |
| St. Louis, Mo.....     | 49.7    | 48.8    | 48.3    | 47.8    | 47.2    | 46.5    | 46.2    | 46.0    | 46.5    | 47.8     | 50.0     | 52.2  | 54.2    | 55.8    | 57.0    | 57.8    | 57.5    | 56.5    | 55.6    | 54.2    | 53.2    |          |          |         |       |
| St. Paul, Minn.....    | 38.9    | 38.3    | 37.6    | 36.9    | 36.7    | 36.1    | 35.9    | 35.7    | 35.7    | 36.6     | 38.7     | 41.0  | 43.1    | 44.7    | 45.9    | 46.5    | 46.6    | 45.4    | 43.9    | 42.5    | 41.6    |          |          |         |       |
| Salt Lake City, Utah.  | 43.1    | 42.4    | 42.4    | 41.4    | 41.1    | 41.2    | 40.5    | 41.7    | 40.0    | 40.2     | 42.4     | 45.8  | 48.7    | 51.4    | 52.5    | 53.0    | 52.9    | 51.4    | 49.4    | 47.6    | 45.8    |          |          |         |       |
| San Diego, Cal.....    | 58.5    | 57.9    | 57.5    | 57.2    | 56.8    | 56.5    | 55.9    | 55.3    | 55.3    | 55.2     | 56.9     | 59.9  | 62.5    | 64.3    | 65.5    | 66.0    | 65.9    | 65.6    | 64.7    | 63.1    | 62.0    |          |          |         |       |
| San Francisco, Cal..   | 56.0    | 55.7    | 55.1    | 54.7    | 54.6    | 54.0    | 53.8    | 54.3    | 53.7    | 53.4     | 53.8     | 54.5  | 55.7    | 56.7    | 57.6    | 58.9    | 59.6    | 60.2    | 59.6    | 58.7    | 57.8    |          |          |         |       |
| Santa Fe, N. Mex....   | 38.4    | 37.9    | 36.9    | 36.3    | 35.7    | 35.0    | 34.2    | 34.1    | 33.1    | 36.4     | 40.2     | 42.9  | 45.1    | 47.0    | 48.8    | 49.8    | 50.2    | 49.7    | 47.3    | 43.4    | 41.0    |          |          |         |       |
| Savannah, Ga.....      | 56.8    | 56.3    | 55.7    | 55.2    | 54.3    | 53.6    | 53.2    | 53.8    | 56.4    | 59.9     | 62.9     | 65.3  | 66.7    | 68.0    | 68.7    | 68.3    | 66.1    | 63.2    | 61.5    | 60.5    | 59.4    |          |          |         |       |
| Washington, D. C....   | 41.0    | 40.5    | 39.7    | 39.1    | 38.3    | 37.7    | 37.3    | 39.5    | 42.2    | 45.5     | 48.6     | 50.5  | 52.6    | 53.8    | 54.4    | 54.2    | 52.7    | 50.5    | 48.6    | 46.8    | 44.7    |          |          |         |       |
| <i>West Indies.</i>    |         |         |         |         |         |         |         |         |         |          |          |       |         |         |         |         |         |         |         |         |         |          |          |         |       |
| Basseterre, St. Kitts. | 77.5    | 77.2    | 76.7    | 76.7    | 76.8    | 77.9    | 81.0    | 82.1    | 82.2    | 83.0     | 83.3     | 83.5  | 82.9    | 82.5    | 81.6    | 80.8    | 79.2    | 78.5    | 78.7    | 79.1    | 78.3    | 77.9     | 77.5     | 79.7    |       |
| Bridgetown, Bar....    | 76.8    | 76.6    | 76.4    | 76.3    | 76.5    | 78.2    | 81.7    | 83.3    | 84.3    | 84.6     | 84.7     | 84.3  | 83.9    | 83.5    | 82.9    | 81.4    | 80.4    | 79.3    | 78.7    | 78.2    | 77.8    | 77.4     | 77.0     | 80.0    |       |
| Cienfuegos, Cuba....   | 69.1    | 68.3    | 67.9    | 67.6    | 67.5    | 67.5    | 68.0    | 70.7    | 72.2    | 76.8     | 79.0     | 80.5  | 81.2    | 80.7    | 80.2    | 79.2    | 77.5    | 75.5    | 73.7    | 72.7    | 71.5    | 71.0     | 70.4     | 73.4    |       |
| Havana, Cuba.....      | 72.3    | 71.9    | 71.5    | 71.3    | 70.9    | 70.9    | 71.2    | 72.4    | 75.2    | 76.7     | 78.1     | 78.4  | 78.5    | 78.1    | 78.0    | 77.6    | 76.7    | 75.6    | 74.9    | 74.5    | 74.3    | 73.9     | 73.4     | 74.6    |       |
| Kingston, Jamaica....  | 73.2    | 73.0    | 72.5    | 72.4    | 72.3    | 72.0    | 71.9    | 73.4    | 76.7    | 78.1     | 81.5     | 82.6  | 82.6    | 82.6    | 81.4    | 80.9    | 80.0    | 78.2    | 76.5    | 75.6    | 75.0    | 74.3     | 73.8     | 76.8    |       |
| Port of Spain, Trin..  | 74.6    | 74.1    | 73.6    | 73.4    | 73.4    | 74.0    | 78.2    | 81.9    | 83.2    | 83.9     | 84.5     | 85.0  | 84.8    | 83.3    | 83.1    | 82.6    | 81.3    | 80.7    | 79.2    | 78.5    | 77.8    | 77.1     | 76.6     | 75.9    |       |
| P. Principe, Cuba....  | 70.2    | 69.6    | 69.4    | 69.0    | 69.0    | 69.1    | 69.7    | 72.6    | 75.3    | 77.2     | 78.1     | 79.2  | 79.9    | 80.0    | 79.6    | 77.8    | 77.0    | 74.9    | 73.6    | 72.5    | 72.0    | 71.5     | 71.3     | 70.6    |       |
| Roseau, Dominica....   | 76.0    | 75.8    | 75.7    | 75.7    | 75.7    | 76.9    | 80.0    | 82.0    | 84.0    | 85.0     | 85.6     | 85.6  | 85.5    | 84.3    | 83.6    | 82.2    | 80.6    | 78.5    | 77.0    | 75.9    | 75.1    | 74.6     | 74.3     | 73.7    |       |
| San Juan, P. R.....    | 75.3    | 75.3    | 74.8    | 74.4    | 74.3    | 74.5    | 76.1    | 78.0    | 80.5    | 81.8     | 82.6     | 82.6  | 82.7    | 82.2    | 81.1    | 80.0    | 79.0    | 78.5    | 78.2    | 77.9    | 76.9    | 76.5     | 76.2     | 76.1    |       |
| Santiago de Cuba....   | 73.0    | 72.7    | 72.3    | 72.0    | 71.7    | 71.6    | 73.4    | 75.2    | 79.2    | 81.4     | 83.6     | 83.6  | 83.8    | 83.0    | 82.2    | 81.0    | 79.4    | 77.6    | 76.6    | 75.9    | 75.1    | 74.6     | 74.3     | 73.7    |       |
| Santo Domingo, S. D.   | 73.3    | 72.8    | 72.8    | 72.7    | 72.4    | 72.2    | 73.2    | 76.4    | 79.3    | 81.5     | 82.3     | 83.2  | 82.5    | 81.8    | 81.1    | 80.5    | 78.8    | 77.7    | 76.9    | 76.3    | 75.4    | 74.8     | 74.5     | 74.0    |       |
| Willemstad, Curaçao    | 79.6    | 79.4    | 79.2    | 79.0    | 78.7    | 78.7    | 81.0    | 82.6    | 83.3    | 83.5     | 83.9     | 83.7  | 83.9    | 84.2    | 84.4    | 83.7    | 82.3    | 81.4    | 81.1    | 81.0    | 80.7    | 80.6     | 80.2     | 79.9    |       |

TABLE IV.—Mean pressure for each hour of seventy-fifth meridian time, November, 1899.

| Stations.              | 1 a. m. | 2 a. m. | 3 a. m. | 4 a. m. | 5 a. m. | 6 a. m. | 7 a. m. | 8 a. m. | 9 a. m. | 10 a. m. | 11 a. m. | Noon.  | 1 p. m. | 2 p. m. | 3 p. m. | 4 p. m. | 5 p. m. | 6 p. m. | 7 p. m. | 8 p. m. | 9 p. m. | 10 p. m. | 11 p. m. | Midn't. | Mean.  |        |  |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|---------|--------|--------|--|
| Bismarck, N. Dak....   | 28.245  | 28.244  | 28.243  | 28.243  | 28.243  | 28.243  | 28.245  | 28.248  | 28.253  | 28.257   | 28.255   | 28.249 | 28.238  | 28.228  | 28.214  | 28.206  | 28.204  | 28.206  | 28.210  | 28.212  | 28.218  | 28.219   | 28.219   | 28.220  | 28.222 |        |  |
| Boston, Mass.....      | 29.868  | 29.870  | 29.866  | 29.864  | 29.869  | 29.872  | 29.882  | 29.889  | 29.896  | 29.896   | 29.892   | 29.872 | 29.857  | 29.843  | 29.836  | 29.842  | 29.851  | 29.859  | 29.865  | 29.871  | 29.876  | 29.876   | 29.875   | 29.875  | 29.866 |        |  |
| Buffalo, N. Y.....     | 29.211  | 29.210  | 29.209  | 29.207  | 29.209  | 29.212  | 29.215  | 29.222  | 29.231  | 29.232   | 29.229   | 29.217 | 29.204  | 29.197  | 29.196  | 29.198  | 29.202  | 29.209  | 29.213  | 29.214  | 29.215  | 29.214   | 29.212   | 29.211  | 29.212 |        |  |
| Cedar City, Utah....   | 25.297  | 25.297  | 25.299  | 25.298  | 25.294  | 25.289  | 25.289  | 25.293  | 25.297  | 25.305   | 25.317   | 25.325 | 25.321  | 25.308  | 25.292  | 25.279  | 25.273  | 25.272  | 25.270  | 25.276  | 25.282  | 25.287   | 25.293   | 25.299  | 25.294 |        |  |
| Chicago, Ill.....      | 29.174  | 29.172  | 29.173  | 29.172  | 29.172  | 29.175  | 29.177  | 29.182  | 29.187  | 29.189   | 29.181   | 29.164 | 29.148  | 29.139  | 29.138  | 29.143  | 29.147  | 29.150  | 29.150  | 29.151  | 29.156  | 29.160   | 29.169   | 29.169  | 29.165 |        |  |
| Cincinnati, Ohio....   | 29.388  | 29.388  | 29.389  | 29.387  | 29.391  | 29.396  | 29.403  | 29.411  | 29.421  | 29.432   | 29.416   | 29.401 | 29.379  | 29.366  | 29.360  | 29.359  | 29.364  | 29.369  | 29.377  | 29.381  | 29.383  | 29.385   | 29.384   | 29.383  | 29.388 |        |  |
| Cleveland, Ohio.....   | 29.216  | 29.214  | 29.215  | 29.214  | 29.217  | 29.220  | 29.227  | 29.233  | 29.238  | 29.239   | 29.235   | 29.225 | 29.215  | 29.205  | 29.206  | 29.211  | 29.215  | 29.222  | 29.226  | 29.228  | 29.225  | 29.220   | 29.219   | 29.215  | 29.221 |        |  |
| Detroit, Mich.....     | 29.246  | 29.252  | 29.254  | 29.251  | 29.253  | 29.256  | 29.260  | 29.269  | 29.275  | 29.278   | 29.282   | 29.289 | 29.293  | 29.293  | 29.293  | 29.296  | 29.299  | 29.292  | 29.292  | 29.299  | 29.351  | 29.351   | 29.351   | 29.349  | 29.348 |        |  |
| Dodge, Kans.....       | 27.416  | 27.413  | 27.413  | 27.414  | 27.412  | 27.413  | 27.418  | 27.418  | 27.428  | 27.438   | 27.438   | 27.434 | 27.418  | 27.405  | 27.378  | 27.367  | 27.367  | 27.369  | 27.378  | 27.399  | 27.409  | 27.403   | 27.407   | 27.411  | 27.412 | 27.407 |  |
| Eastport, Me.....      | 29.867  | 29.868  | 29.868  | 29.870  | 29.873  | 29.879  | 29.886  | 29.891  | 29.896  | 29.896   | 29.895   | 29.882 | 29.869  | 29.859  | 29.850  | 29.847  | 29.848  | 29.851  | 29.857  | 29.861  | 29.864  | 29.865   | 29.866   | 29.865  | 29.864 |        |  |
| Galveston, Tex.....    | 29.988  | 29.981  | 29.976  | 29.970  | 29.969  | 29.972  | 29.980  | 29.988  | 29.997  | 29.016   | 29.018   | 29.008 | 29.991  | 29.968  | 29.951  | 29.941  | 29.938  | 29.942  | 29.949  | 29.961  | 29.971  | 29.980   | 29.986   | 29.989  | 29.977 |        |  |
| Hayre, Mont.....       | 29.288  | 29.286  | 29.289  | 29.288  | 29.286  | 29.281  | 29.278  | 29.276  | 29.279  | 29.280   | 29.281   | 29.282 | 29.276  | 29.261  | 29.244  | 29.235  | 29.237  | 29.238  | 29.246  | 29.250  | 29.255  | 29.258   | 29.262   | 29.263  | 29.268 |        |  |
| Independence, Cal....  | 26.020  | 26.025  | 26.024  | 26.020  | 26.020  | 26.016  | 26.015  | 26.014  | 26.024  | 26.030   | 26.040   | 26.049 | 26.054  | 26.049  | 26.031  | 26.023  | 26.026  | 26.025  | 26.029  | 26.036  | 26.047  | 26.054   | 26.061   | 26.068  | 26.075 |        |  |
| KallsPELL, Mont.....   | 26.905  | 26.905  | 26.904  | 26.900  | 26.900  | 26.905  | 26.903  | 26.903  | 26.908  | 26.908   | 26.904   | 26.912 | 26.911  | 26.904  | 26.903  | 26.904  | 26.908  | 26.912  | 26.918  | 26.925  | 26.932  | 26.939   | 26.946   | 26.953  | 26.960 |        |  |
| Kansas City, Mo.....   | 29.027  | 29.025  | 29.021  | 29.019  | 29.015  | 29.018  | 29.020  | 29.027  | 29.041  | 29.050   | 29.052   | 29.049 | 29.031  | 29.015  | 29.002  | 29.007  | 29.008  | 29.004  | 29.012  | 29.018  | 29.017  | 29.021   | 29.023   | 29.024  | 29.022 |        |  |
| Key West, Fla.....     | 29.983  | 29.978  | 29.966  | 29.967  | 29.976  | 29.987  | 29.001  | 29.015  | 29.019  | 29.015   | 29.011   | 29.001 | 29.981  | 29.961  | 29.949  | 29.946  | 29.949  | 29.953  | 29.963  | 29.983  | 29.992  | 29.994   | 29.995   | 29.991  | 29.989 |        |  |
| Marquette, Mich.....   | 29.213  | 29.212  | 29.213  | 29.211  | 29.212  | 29.214  | 29.217  | 29.219  | 29.218  | 29.220   | 29.223   | 29.218 | 29.209  | 29.200  | 29.195  | 29.197  | 29.200  | 29.206  | 29.211  | 29.208  | 29.209  | 29.208   | 29.201   | 29.199  | 29.210 |        |  |
| Memphis, Tenn.....     | 29.638  | 29.635  | 29.636  | 29.634  | 29.636  | 29.640  | 29.648  | 29.658  | 29.673  | 29.673   | 29.659   | 29.633 | 29.616  | 29.601  | 29.596  | 29.598  | 29.603  | 29.612  | 29.620  | 29.628  | 29.638  | 29.632   | 29.632   | 29.633  | 29.633 |        |  |
| Mt. Tamalpais, Cal.... | 27.573  | 27.568  | 27.566  | 27.567  | 27.566  | 27.562  | 27.554  | 27.557  | 27.560  | 27.566   | 27.559   | 27.549 | 27.538  | 27.523  | 27.504  | 27.491  | 27.481  | 27.475  | 27.480  | 27.486  | 27.492  | 27.498   | 27.504   | 27.510  | 27.516 |        |  |
| New Orleans, La.....   | 29.987  | 29.987  | 29.986  | 29.986  | 29.988  | 29.993  | 29.003  | 29.017  | 29.031  | 29.040   | 29.044   | 29.022 | 29.003  | 29.970  | 29.953  | 29.948  | 29.948  | 29.953  | 29.962  | 29.970  | 29.984  | 29.989   | 29.990   | 29.990  | 29.989 |        |  |
| New York, N. Y.....    | 29.698  | 29.699  | 29.697  | 29.698  | 29.703  | 29.707  | 29.714  | 29.721  | 29.723  | 29.722   | 29.710   | 29.694 | 29.678  | 29.668  | 29.665  | 29.670  | 29.675  | 29.685  | 29.694  | 29.701  | 29.705  | 29.708   | 29.710   | 29.710  | 29.698 |        |  |
| Philadelphia, Pa.....  | 29.936  | 29.939  | 29.940  | 29.939  | 29.941  | 29.947  | 29.960  | 29.970  | 29.972  | 29.972   | 29.963   | 29.944 | 29.927  | 29.916  | 29.910  | 29.912  | 29.917  | 29.923  | 29.929  | 29.936  | 29.940  | 29.940   | 29.943   | 29.946  | 29.940 |        |  |
| Pittsburg, Pa.....     | 29.149  | 29.144  | 29.144  | 29.144  | 29.146  | 29.154  | 29.158  | 29.166  | 29.168  | 29.165   | 29.154   | 29.135 | 29.122  | 29.118  | 29.124  | 29.124  | 29.123  | 29.124  | 29.125  | 29.130  | 29.135  | 29.136   | 29.150   | 29.155  | 29.148 |        |  |
| Portland, Oreg.....    | 29.709  | 29.712  | 29.716  | 29.716  | 29.717  | 29.719  | 29.713  | 29.716  | 29.718  | 29.724   | 29.733   | 29.741 | 29.748  | 29.748  | 29.735  | 29.726  | 29.716  | 29.714  | 29.711  | 29.708  | 29.707  | 29.706   | 29.703   | 29.703  | 29.719 |        |  |
| St. Louis, Mo.....     | 29.441  | 29.435  | 29.435  | 29.432  | 29.431  | 29.433  | 29.439  | 29.447  | 29.456  | 29.462   | 29.462   | 29.455 | 29.436  | 29.417  | 29.405  | 29.402  | 29.407  | 29.411  | 29.420  | 29.426  | 29.430  | 29.432   | 29.433   | 29.432  | 29.432 |        |  |
| St. Paul, Minn.....    | 29.132  | 29.131  | 29.136  | 29.139  | 29.138  | 29.138  | 29.138  | 29.140  | 29.147  | 29.150   | 29.148   | 29.149 | 29.135  | 29.118  | 29.108  | 29.103  | 29.105  | 29.106  | 29.114  | 29.117  | 29.116  | 29.117   | 29.116   | 29.118  | 29.128 |        |  |
| Salt Lake City, Utah.. | 29.676  | 29.679  | 29.677  | 29.677  | 29.681  | 29.676  | 29.677  | 29.679  | 29.684  | 29.694   | 29.699   | 29.707 | 29.699  | 29.684  | 29.666  | 29.657  | 29.652  | 29.654  | 29.655  | 29.659  | 29.665  | 29.667   | 29.673   | 29.675  | 29.675 |        |  |
| San Diego, Cal.....    | 29.919  | 29.920  | 29.917  | 29.914  | 29.910  | 29.904  | 29.900  | 29.908  | 29.919  | 29.933   | 29.938   | 29.939 | 29.930  | 29.911  | 29.892  | 29.880  | 29.881  | 29.879  | 29.881  | 29.893  | 29.901  | 29.908   | 29.915   | 29.908  | 29.908 |        |  |
| San Francisco, Cal.... | 29.901  | 29.900  | 29.909  | 29.900  | 29.908  | 29.903  | 29.897  | 29.899  | 29.904  | 29.902   | 29.914   | 29.923 | 29.928  | 29.924  | 29.910  | 29.891  | 29.883  | 29.880  | 29.878  | 29.874  | 29.884  | 29.898   | 29.902   | 29.906  | 29.907 |        |  |
| Santa Fe, N. Mex.....  | 23.277  | 23.273  | 23.270  | 23.271  | 23.268  | 23.269  | 23.270  | 23.279  | 23.278  | 23.287   | 23.299   | 23.302 | 23.292  | 23.275  | 23.254  | 23.246  | 23.245  | 23.249  | 23.253  | 23.262  | 23.268  | 23.275   | 23.280   | 23.284  | 23.272 |        |  |
| Savannah, Ga.....      | 30.001  | 30.001  | 30.000  | 30.000  | 30.005  | 30.013  | 30.027  | 30.036  | 30.047  | 30.048   | 30.044   | 30.025 | 30.003  | 29.988  | 29.980  | 29.978  | 29.981  | 29.987  | 29.996  | 30.002  | 30.010  | 30.015   | 30.014   | 30.013  | 30.009 |        |  |
| Washington, D. C.....  | 29.948  | 29.951  | 29.953  | 29.952  | 29.959  | 29.964  | 29.976  | 29.987  | 29.992  | 29.994   | 29.987   | 29.968 | 29.943  | 29.929  | 29.924  | 29.923  | 29.927  | 29.935  | 29.944  | 29.950  | 29.955  | 29.961   | 29.962   | 29.962  | 29.956 |        |  |
| <i>West Indies.</i>    |         |         |         |         |         |         |         |         |         |          |          |        |         |         |         |         |         |         |         |         |         |          |          |         |        |        |  |
| Baseterre, St. Kitts.. | 29.861  | 29.861  | 29.845  | 29.847  | 29.858  | 29.875  | 29.897  | 29.908  | 29.913  | 29.907   | 29.887   | 29.863 | 29.846  | 29.836  | 29.834  | 29.841  | 29.852  | 29.863  | 29.880  | 29.898  | 29.899  | 29.896   | 29.887   | 29.875  | 29.871 |        |  |
| Bridgetown, Bar.....   | 29.826  | 29.816  | 29.817  | 29.822  | 29.837  | 29.851  | 29.870  | 29.883  | 29.884  | 29.876   | 29.854   | 29.834 | 29.814  | 29.807  | 29.807  | 29.814  | 29.824  | 29.836  | 29.851  | 29.864  | 29.868  | 29.865   | 29.856   | 29.843  | 29.843 |        |  |
| Cienfuegos, Cuba....   | 29.887  | 29.876  | 29.868  | 29.865  | 29.866  | 29.879  | 29.896  | 29.908  | 29.921  | 29.922   | 29.911   | 29.893 | 29.862  | 29.845  | 29.840  | 29.846  | 29.856  | 29.873  | 29.888  | 29.899  | 29.903  | 29.903   | 29.894   | 29.881  | 29.881 |        |  |
| Havana, Cuba.....      | 29.917  | 29.910  | 29.899  | 29.898  | 29.902  | 29.910  | 29.923  | 29.935  | 29.948  | 29.951   | 29.948   | 29.933 | 29.908  | 29.893  | 29.886  | 29.885  | 29.888  | 29.892  | 29.906  | 29.919  | 29.931  | 29.933   | 29.932   | 29.925  | 29.915 |        |  |
| Kingston, Jamaica....  | 29.569  | 29.552  | 29.543  | 29.540  | 29.544  | 29.558  | 29.582  | 29.595  | 29.609  | 29.607   | 29.594   | 29.570 | 29.545  | 29.517  | 29.509  | 29.511  | 29.517  | 29.530  | 29.553  | 29.571  | 29.580  | 29.586   | 29.586   | 29.578  | 29.560 |        |  |
| Port of Spain, Trin..  | 29.783  | 29.775  | 29.774  | 29.783  | 29.799  | 29.820  | 29.842  | 29.853  | 29.855  | 29.844   | 29.819   | 29.795 | 29.769  | 29.748  | 29.738  | 29.733  | 29.737  | 29.787  | 29.806  | 29.818  | 29.824  | 29.821   | 29.811   | 29.800  | 29.801 |        |  |
| P. Principe, Cuba....  | 29.551  | 29.539  | 29.532  | 29.533  | 29.537  | 29.552  | 29.565  | 29.580  | 29.588  | 29.589   | 29.579   | 29.561 | 29.535  | 29.519  | 29.511  | 29.516  | 29.523  | 29.535  | 29.547  | 29.561  | 29.566  | 29.573   | 29.568   | 29.560  | 29.551 |        |  |
| Roseau, Dominica.....  | 29.841  | 29.830  | 29.829  | 29.834  | 29.846  | 29.861  | 29.878  | 29.893  | 29.901  | 29.881   | 29.860   | 29.837 | 29.822  | 29.813  | 29.816  | 29.826  | 29.834  | 29.846  | 29.861  | 29.876  | 29.878  | 29.875   | 29.868   | 29.858  | 29.852 |        |  |
| San Juan, P. R.....    | 29.819  | 29.804  | 29.799  | 29.802  | 29.813  | 29.826  | 29.841  | 29.858  | 29.863  | 29.854   | 29.838   | 29.812 | 29.790  | 29.775  | 29.770  | 29.778  | 29.789  | 29.802  | 29.821  | 29.838  | 29.845  | 29.843   | 29.837   | 29.829  | 29.819 |        |  |
| Santiago de Cuba....   | 29.790  | 29.782  | 29.775  | 29.774  | 29.782  | 29.793  | 29.807  | 29.816  | 29.830  | 29.825   | 29.812   | 29.789 | 29.764  | 29.753  | 29.746  | 29.746  | 29.754  | 29.768  | 29.781  | 29.797  | 29.809  | 29.811   |          |         |        |        |  |

TABLE V.—Average wind movement for each hour of seventy-fifth meridian time, November, 1899.

| Stations.             | 1 a. m. | 2 a. m. | 3 a. m. | 4 a. m. | 5 a. m. | 6 a. m. | 7 a. m. | 8 a. m. | 9 a. m. | 10 a. m. | 11 a. m. | Noon. | 1 p. m. | 2 p. m. | 3 p. m. | 4 p. m. | 5 p. m. | 6 p. m. | 7 p. m. | 8 p. m. | 9 p. m. | 10 p. m. | 11 p. m. | Midnight. | Mean. |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|-----------|-------|
| Abilene, Tex.         | 8.4     | 9.2     | 9.4     | 8.7     | 8.3     | 8.2     | 7.5     | 7.4     | 7.7     | 8.2      | 10.5     | 11.4  | 12.8    | 12.5    | 12.3    | 12.8    | 13.0    | 12.2    | 9.6     | 8.5     | 7.6     | 8.5      | 8.7      | 8.4       | 9.7   |
| Albany, N. Y.         | 5.9     | 5.6     | 5.8     | 6.1     | 6.0     | 6.1     | 5.9     | 6.5     | 7.1     | 8.4      | 8.9      | 8.8   | 9.1     | 9.0     | 8.5     | 7.9     | 7.7     | 6.7     | 6.6     | 6.7     | 6.2     | 6.2      | 6.0      | 5.5       | 7.0   |
| Alpena, Mich.         | 7.3     | 6.9     | 6.6     | 6.7     | 6.6     | 6.9     | 7.1     | 6.9     | 7.2     | 8.6      | 9.1      | 10.0  | 9.8     | 10.3    | 9.9     | 9.3     | 8.7     | 7.8     | 7.3     | 7.7     | 7.8     | 7.3      | 7.5      | 7.3       | 8.0   |
| Amarillo, Tex.        | 8.9     | 9.2     | 9.3     | 8.6     | 8.4     | 8.7     | 8.7     | 7.7     | 7.8     | 8.5      | 9.3      | 9.2   | 9.6     | 9.5     | 10.7    | 11.2    | 10.7    | 9.8     | 7.5     | 6.8     | 8.0     | 8.2      | 8.2      | 8.1       | 8.9   |
| Atlanta, Ga.          | 10.7    | 11.0    | 10.3    | 10.1    | 9.9     | 10.1    | 9.8     | 9.7     | 9.7     | 9.6      | 10.4     | 9.9   | 9.9     | 10.3    | 9.8     | 10.3    | 9.9     | 8.6     | 8.8     | 9.0     | 10.1    | 10.2     | 9.8      | 10.5      | 9.9   |
| Atlantic City, N. J.  | 9.3     | 9.9     | 9.8     | 10.1    | 10.2    | 10.1    | 10.5    | 10.4    | 11.8    | 13.0     | 12.9     | 12.3  | 12.7    | 12.1    | 12.0    | 10.8    | 9.8     | 8.7     | 9.1     | 8.7     | 8.6     | 8.6      | 9.1      | 8.8       | 10.4  |
| Augusta, Ga.          | 3.6     | 3.3     | 3.6     | 3.6     | 4.0     | 3.9     | 4.1     | 4.1     | 4.7     | 5.3      | 6.2      | 6.8   | 7.2     | 7.2     | 7.2     | 6.7     | 5.7     | 5.0     | 4.1     | 4.1     | 3.7     | 3.5      | 3.8      | 3.6       | 4.8   |
| Baker City, Oreg.     | 5.2     | 6.0     | 6.9     | 6.8     | 7.1     | 6.3     | 6.2     | 7.1     | 6.8     | 6.8      | 5.9      | 5.0   | 4.8     | 4.7     | 5.5     | 6.8     | 6.9     | 6.1     | 5.1     | 5.0     | 4.0     | 4.1      | 4.8      | 5.1       | 5.8   |
| Baltimore, Md.        | 3.5     | 3.6     | 3.6     | 3.7     | 3.4     | 3.2     | 3.0     | 3.7     | 4.7     | 6.3      | 6.4      | 6.6   | 6.7     | 6.6     | 6.0     | 5.6     | 4.9     | 4.0     | 3.9     | 3.6     | 3.7     | 3.3      | 3.2      | 3.4       | 4.4   |
| Bismarck, N. Dak.     | 5.5     | 5.4     | 5.5     | 5.5     | 5.1     | 5.2     | 5.7     | 6.5     | 7.0     | 6.8      | 6.5      | 7.2   | 9.3     | 9.7     | 10.2    | 10.1    | 9.1     | 7.3     | 6.4     | 5.9     | 5.5     | 5.6      | 5.6      | 5.6       | 6.7   |
| Block Island, R. I.   | 16.2    | 15.6    | 15.4    | 16.0    | 16.0    | 15.9    | 15.9    | 16.6    | 17.0    | 16.8     | 16.1     | 15.7  | 16.6    | 16.6    | 16.0    | 15.7    | 15.3    | 16.0    | 16.4    | 16.6    | 16.6    | 17.4     | 16.3     | 16.6      | 16.2  |
| Boise, Idaho.         | 3.8     | 3.8     | 3.7     | 4.2     | 4.0     | 4.0     | 4.3     | 3.9     | 4.4     | 3.6      | 3.5      | 4.2   | 4.4     | 4.8     | 5.2     | 5.6     | 4.9     | 5.3     | 4.7     | 3.9     | 4.1     | 4.3      | 4.1      | 4.5       | 4.3   |
| Boston, Mass.         | 10.6    | 10.1    | 9.9     | 9.8     | 9.3     | 9.8     | 9.8     | 10.0    | 10.3    | 10.4     | 10.9     | 10.7  | 10.9    | 11.3    | 11.2    | 10.8    | 10.2    | 9.8     | 9.8     | 9.8     | 10.0    | 10.1     | 10.0     | 10.4      | 10.3  |
| Buffalo, N. Y.        | 12.0    | 12.0    | 11.9    | 12.0    | 12.2    | 11.7    | 12.0    | 12.4    | 12.1    | 12.3     | 13.3     | 13.8  | 13.9    | 14.4    | 14.2    | 13.6    | 13.1    | 12.7    | 12.5    | 12.0    | 11.3    | 12.1     | 12.1     | 12.6      | 12.6  |
| Calro, Ill.           | 7.1     | 7.1     | 6.5     | 6.6     | 6.8     | 7.2     | 7.5     | 7.2     | 7.4     | 8.3      | 8.8      | 9.3   | 9.7     | 10.4    | 10.6    | 10.8    | 10.2    | 8.8     | 7.9     | 7.9     | 8.1     | 7.8      | 7.3      | 7.3       | 8.2   |
| Cape Henry, Va.       | 13.1    | 13.6    | 14.2    | 14.2    | 13.8    | 13.7    | 14.6    | 14.3    | 13.9    | 13.3     | 12.2     | 11.9  | 12.2    | 12.3    | 11.6    | 11.1    | 10.1    | 9.9     | 10.1    | 11.0    | 11.6    | 12.1     | 11.6     | 12.3      | 12.4  |
| Carson City, Nev.     | 4.5     | 4.8     | 4.8     | 5.1     | 5.5     | 4.5     | 4.6     | 5.0     | 5.2     | 5.0      | 5.0      | 5.6   | 5.9     | 6.3     | 6.0     | 6.3     | 6.7     | 6.6     | 7.2     | 6.8     | 6.5     | 5.0      | 4.6      | 5.0       | 5.5   |
| Cedar City, Utah.     | 7.6     | 6.5     | 6.5     | 5.9     | 6.2     | 6.1     | 5.2     | 5.6     | 5.7     | 4.9      | 4.0      | 2.9   | 3.7     | 4.5     | 5.8     | 6.9     | 7.4     | 6.9     | 6.2     | 5.0     | 5.8     | 7.0      | 7.4      | 7.7       | 5.9   |
| Charleston, S. C.     | 7.6     | 8.3     | 8.3     | 8.2     | 9.3     | 9.3     | 9.6     | 9.9     | 10.2    | 10.2     | 10.4     | 9.7   | 10.8    | 10.1    | 10.5    | 10.3    | 9.6     | 8.2     | 7.9     | 7.9     | 8.1     | 8.3      | 8.2      | 7.8       | 9.1   |
| Charlotte, N. C.      | 5.1     | 5.3     | 5.2     | 5.5     | 5.3     | 5.1     | 5.4     | 5.7     | 5.9     | 6.4      | 6.9      | 7.0   | 7.4     | 7.4     | 7.5     | 7.4     | 6.1     | 5.2     | 5.3     | 5.4     | 6.2     | 5.6      | 5.8      | 5.5       | 6.0   |
| Chattanooga, Tenn.    | 4.3     | 4.0     | 4.1     | 4.4     | 4.1     | 4.1     | 4.9     | 4.6     | 4.8     | 5.6      | 7.0      | 6.9   | 7.7     | 7.7     | 7.8     | 8.1     | 7.7     | 7.4     | 7.0     | 6.0     | 4.9     | 5.2      | 5.3      | 4.6       | 5.8   |
| Cheyenne, Wyo.        | 9.5     | 9.1     | 9.3     | 9.3     | 8.7     | 8.7     | 8.6     | 8.8     | 9.6     | 9.1      | 9.7      | 12.8  | 13.5    | 14.0    | 15.2    | 14.8    | 14.9    | 13.1    | 11.3    | 9.2     | 8.6     | 8.3      | 9.7      | 10.6      | 10.7  |
| Chicago, Ill.         | 15.9    | 15.9    | 15.7    | 16.1    | 16.8    | 16.9    | 16.3    | 16.4    | 16.3    | 16.7     | 17.3     | 17.5  | 18.2    | 18.7    | 18.3    | 18.6    | 18.5    | 18.4    | 18.9    | 17.7    | 17.2    | 17.1     | 16.5     | 15.4      | 17.1  |
| Cincinnati, Ohio.     | 5.6     | 5.7     | 5.8     | 5.9     | 5.2     | 4.9     | 5.5     | 5.6     | 6.0     | 7.0      | 8.1      | 9.0   | 9.7     | 9.7     | 9.5     | 8.8     | 8.5     | 7.6     | 6.9     | 6.4     | 6.2     | 6.1      | 5.6      | 5.8       | 6.9   |
| Cleveland, Ohio.      | 13.0    | 13.1    | 12.5    | 12.0    | 12.3    | 12.2    | 12.1    | 12.9    | 12.8    | 13.2     | 12.9     | 13.2  | 13.4    | 13.0    | 12.6    | 12.8    | 12.2    | 11.8    | 12.7    | 13.4    | 13.1    | 13.7     | 13.5     | 13.4      | 12.8  |
| Columbia, Mo.         | 7.7     | 7.5     | 8.0     | 7.5     | 8.3     | 8.2     | 8.4     | 8.3     | 8.5     | 8.5      | 9.4      | 9.9   | 10.6    | 10.9    | 10.8    | 10.8    | 9.5     | 8.0     | 7.4     | 8.1     | 8.0     | 8.0      | 8.2      | 8.0       | 8.7   |
| Columbus, Ohio.       | 6.1     | 6.3     | 6.5     | 6.3     | 6.1     | 6.0     | 5.9     | 6.0     | 6.2     | 6.8      | 7.9      | 8.1   | 8.5     | 8.8     | 8.5     | 8.4     | 7.8     | 7.0     | 6.9     | 7.2     | 7.0     | 6.6      | 6.5      | 6.3       | 7.0   |
| Concordia, Kans.      | 4.9     | 4.8     | 4.9     | 4.9     | 5.1     | 4.2     | 4.0     | 4.6     | 4.8     | 5.4      | 6.1      | 6.5   | 6.7     | 7.1     | 7.4     | 7.5     | 7.3     | 5.5     | 4.4     | 4.2     | 4.7     | 4.5      | 4.5      | 4.6       | 5.4   |
| Corpus Christi, Tex.  | 10.5    | 9.3     | 8.9     | 8.3     | 8.9     | 8.8     | 8.8     | 8.9     | 8.8     | 9.4      | 10.4     | 11.2  | 12.0    | 11.9    | 12.9    | 13.2    | 13.0    | 12.1    | 11.4    | 10.0    | 10.1    | 11.2     | 11.9     | 10.9      | 10.5  |
| Davenport, Iowa.      | 5.7     | 5.7     | 5.8     | 5.6     | 5.7     | 5.8     | 6.0     | 6.2     | 6.4     | 6.8      | 7.4      | 7.3   | 8.0     | 8.4     | 8.8     | 8.5     | 8.1     | 6.9     | 6.4     | 5.9     | 5.8     | 5.5      | 5.3      | 5.5       | 6.6   |
| Denver, Colo.         | 8.1     | 8.2     | 8.3     | 7.7     | 8.5     | 8.3     | 8.3     | 8.3     | 7.8     | 8.1      | 7.9      | 7.1   | 7.1     | 7.7     | 8.6     | 9.3     | 10.1    | 9.3     | 8.3     | 7.5     | 7.0     | 6.6      | 7.2      | 8.0       | 8.1   |
| Des Moines, Iowa.     | 6.3     | 6.0     | 5.3     | 5.5     | 5.8     | 5.8     | 5.8     | 5.9     | 6.1     | 6.3      | 7.6      | 8.5   | 9.0     | 8.6     | 9.0     | 8.8     | 8.4     | 7.4     | 6.5     | 6.0     | 6.2     | 6.3      | 6.3      | 6.3       | 6.8   |
| Detroit, Mich.        | 7.9     | 7.3     | 7.0     | 6.9     | 7.2     | 7.4     | 7.5     | 7.8     | 7.5     | 8.5      | 8.4      | 9.0   | 9.9     | 9.5     | 9.5     | 9.2     | 8.4     | 7.9     | 8.3     | 8.7     | 9.0     | 8.6      | 8.3      | 7.7       | 8.2   |
| Dodge, Kans.          | 7.2     | 7.1     | 7.0     | 7.0     | 7.3     | 8.2     | 7.4     | 8.1     | 8.4     | 9.2      | 10.3     | 10.8  | 11.3    | 11.9    | 12.5    | 12.8    | 11.9    | 11.3    | 9.0     | 8.1     | 8.0     | 8.1      | 7.5      | 6.9       | 9.0   |
| Dubuque, Iowa.        | 4.5     | 4.9     | 5.1     | 5.2     | 4.9     | 5.1     | 5.2     | 5.8     | 5.6     | 6.4      | 7.0      | 7.4   | 8.3     | 8.7     | 8.5     | 8.8     | 8.1     | 6.6     | 6.3     | 5.9     | 5.0     | 5.2      | 4.8      | 4.7       | 6.2   |
| Duluth, Minn.         | 8.6     | 9.0     | 8.9     | 8.6     | 9.0     | 8.6     | 9.2     | 8.6     | 8.4     | 7.5      | 7.8      | 8.0   | 8.1     | 8.2     | 8.3     | 7.8     | 7.3     | 6.3     | 6.3     | 7.0     | 7.1     | 8.1      | 8.9      | 8.9       | 8.1   |
| Eastport, Me.         | 12.3    | 11.8    | 11.5    | 11.2    | 11.5    | 12.1    | 12.1    | 12.1    | 12.0    | 12.4     | 12.0     | 12.5  | 12.2    | 11.9    | 11.9    | 11.5    | 10.8    | 11.2    | 12.8    | 12.6    | 12.9    | 12.8     | 12.5     | 12.1      | 12.0  |
| Elkins, W. Va.        | 2.8     | 2.7     | 2.8     | 3.2     | 3.4     | 3.1     | 2.9     | 3.3     | 3.1     | 3.5      | 4.2      | 4.6   | 5.5     | 6.2     | 5.7     | 5.5     | 4.7     | 2.9     | 2.8     | 2.3     | 2.5     | 2.3      | 2.5      | 2.5       | 3.6   |
| El Paso, Tex.         | 7.5     | 8.1     | 8.5     | 7.6     | 7.2     | 7.3     | 7.1     | 7.3     | 7.2     | 7.9      | 8.8      | 9.5   | 10.1    | 11.0    | 11.8    | 11.5    | 11.9    | 11.5    | 9.8     | 7.7     | 7.7     | 7.6      | 7.4      | 7.8       | 8.7   |
| Erie, Pa.             | 10.3    | 10.2    | 9.6     | 10.0    | 10.5    | 9.6     | 9.4     | 10.1    | 10.4    | 10.4     | 9.7      | 9.8   | 9.8     | 9.6     | 10.3    | 9.3     | 8.8     | 8.5     | 8.7     | 9.8     | 10.2    | 10.1     | 11.2     | 10.9      | 9.9   |
| Escanaba, Mich.       | 7.4     | 7.3     | 7.5     | 7.3     | 7.7     | 8.2     | 8.0     | 7.1     | 7.5     | 7.9      | 7.8      | 7.9   | 8.6     | 8.7     | 9.1     | 9.0     | 8.0     | 7.3     | 7.0     | 7.7     | 8.1     | 7.6      | 7.4      | 7.0       | 7.8   |
| Eureka, Cal.          | 6.3     | 6.0     | 6.0     | 6.0     | 6.0     | 5.9     | 6.5     | 5.8     | 6.1     | 5.8      | 5.7      | 5.3   | 6.2     | 6.7     | 6.9     | 8.5     | 8.3     | 7.5     | 6.8     | 6.3     | 6.5     | 6.4      | 6.4      | 6.1       | 6.4   |
| Evansville, Ind.      | 5.6     | 5.8     | 5.6     | 5.7     | 5.5     | 6.2     | 6.4     | 6.8     | 6.8     | 7.1      | 7.7      | 8.0   | 8.8     | 9.0     | 8.9     | 9.0     | 8.2     | 7.0     | 6.3     | 6.5     | 6.4     | 6.5      | 6.1      | 6.0       | 6.9   |
| Fort Canby, Wash.     | 23.0    | 23.3    | 23.8    | 24.4    | 24.3    | 24.3    | 23.9    | 23.3    | 23.7    | 23.9     | 23.5     | 24.2  | 23.8    | 24.9    | 24.7    | 25.8    | 25.8    | 26.0    | 26.7    | 25.8    | 23.2    | 22.5     | 22.2     | 22.2      | 24.2  |
| Fort Smith, Ark.      | 6.5     | 6.2     | 6.1     | 5.9     | 5.8     | 5.9     | 5.9     | 6.2     | 6.8     | 7.4      | 7.6      | 7.6   | 8.4     | 8.6     | 8.8     | 9.1     | 8.8     | 8.1     | 7.1     | 6.5     | 6.2     | 5.9      | 5.7      | 6.1       | 7.0   |
| Fresno, Cal.          | 3.1     | 3.3     | 3.1     | 3.4     | 3.7     | 3.3     | 3.2     | 3.6     | 3.8     | 3.5      | 3.6      | 4.0   | 5.0     | 5.4     | 5.9     | 5.4     | 5.0     | 4.5     | 3.7     | 3.5     | 3.6     | 3.4      | 3.5      | 3.4       | 3.9   |
| Galveston, Tex.       | 7.9     | 7.9     | 7.9     | 8.2     | 8.4     | 8.1     | 8.3     | 8.3     | 8.0     | 8.7      | 8.5      | 9.0   | 9.4     | 9.4     | 9.2     | 9.3     | 9.4     | 9.1     | 8.5     | 8.8     | 8.3     | 8.0      | 8.4      | 8.2       | 8.5   |
| Grand Haven, Mich.    | 7.7     | 7.7     | 7.1     | 7.0     | 7.0     | 7.1     | 7.6     | 7.5     | 7.4     | 8.1      | 9.5      | 10.0  | 10.4    | 10.5    | 10.0    | 9.4     | 8.9     | 8.1     | 7.8     | 7.3     | 7.2     | 7.5      | 7.6      | 6.8       | 8.1   |
| Grand Junction, Colo. | 3.3     | 3.2     | 3.1     | 3.9     | 3.9     | 4.1     | 4.0     | 4.2     | 4.1     | 3.8      | 4.1      | 5.9   | 6.0     | 4.8     | 4.3     | 4.2     | 4.1     | 4.5     | 3.4     | 2.7     | 2.7     | 2.5      | 3.3      | 3.4       | 3.9   |
| Green Bay, Wis.       | 7.2     | 7.3     | 6.8     | 7.2     | 7.1     | 6.7     | 7.0     | 6.9     | 7.3     | 7.6      | 8.4      | 8.3   | 9.1     | 9.0     | 8.5     | 8.7     | 7.6     | 6.8     | 6.8     | 7.2     | 6.7     | 6.7      | 6.4      | 6.5       | 7.4   |
| Hannibal, Mo.         | 7.9     | 7.8     | 8.1     | 8.5     | 8.4     | 8.5     | 8.7     | 8.7     | 9.1     | 9.2      | 9.8      | 10.7  | 11.6    | 11.3    | 11.5    | 11.3    | 10.3    | 8.9     | 7.8     | 7.6     | 8.2     | 8.7      | 8.8      | 8.6       | 9.2   |
| Harrisburg, Pa.       | 5.0     | 4.8     | 4.9     | 5.1     | 4.9     | 5.1     | 5.0     | 5.3     | 5.8     | 6.4      | 7.1      | 7.2   | 7.7     | 7.8     | 7.1     | 6.7     | 6.2     | 5.7     | 5.0     | 4.9     | 5.1     | 4.7      | 4.3      | 4.6       | 5.7   |
| Hatteras, N. C.       | 13.5    | 13.4    | 12.7    | 12.4    | 12.6    | 12.2    | 11.8    | 12.5    | 13.1    | 13.1     | 13.7     | 13.3  | 13.7    | 13.2    | 12.2    | 12.0    | 11.6    | 11.2    | 11.7    | 11.8    | 11.5    | 12.1     | 12.7     | 12.7      | 12.5  |
| Havre, Mont.          | 6.4     | 7.1     | 7.0     | 7.3     | 8.1     | 8.4     | 8.1     | 9.1     | 9.1     | 8.4      | 8.3      | 9.0   | 11.0    | 12.3    | 12.7    | 13.5    | 13.2    | 11.3    | 9.2     | 7.9     | 7.9     | 8.5      | 7.5      | 7.2       | 9.1   |
| Helena, Mont.         | 6.3     | 5.8     | 6.0     | 6       |         |         |         |         |         |          |          |       |         |         |         |         |         |         |         |         |         |          |          |           |       |



TABLE V.—Average wind movement, etc.—Continued.

| Stations.              | 1 a. m. | 2 a. m. | 3 a. m. | 4 a. m. | 5 a. m. | 6 a. m. | 7 a. m. | 8 a. m. | 9 a. m. | 10 a. m. | 11 a. m. | Noon. | 1 p. m. | 2 p. m. | 3 p. m. | 4 p. m. | 5 p. m. | 6 p. m. | 7 p. m. | 8 p. m. | 9 p. m. | 10 p. m. | 11 p. m. | Midnight. | Mean. |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|-----------|-------|
| New Haven, Conn.....   | 8.3     | 8.5     | 8.3     | 8.0     | 7.3     | 7.2     | 7.5     | 7.2     | 8.0     | 9.4      | 9.4      | 10.2  | 11.5    | 11.4    | 10.9    | 10.0    | 8.5     | 7.4     | 7.6     | 7.2     | 7.7     | 7.5      | 7.9      | 7.5       | 8.6   |
| New Orleans, La.....   | 5.9     | 6.5     | 6.8     | 6.7     | 6.9     | 6.2     | 6.7     | 7.1     | 6.6     | 7.0      | 8.5      | 9.3   | 10.0    | 9.8     | 9.5     | 9.3     | 8.7     | 7.4     | 6.0     | 5.5     | 5.9     | 6.1      | 5.8      | 6.2       | 7.3   |
| New York, N. Y.....    | 12.3    | 12.2    | 11.7    | 12.8    | 12.8    | 12.9    | 12.3    | 12.5    | 13.3    | 13.3     | 14.2     | 13.2  | 13.6    | 13.8    | 13.7    | 13.1    | 13.1    | 12.9    | 13.6    | 13.8    | 13.8    | 13.4     | 13.7     | 13.3      | 13.1  |
| Norfolk, Va.....       | 7.2     | 7.1     | 7.5     | 7.5     | 7.1     | 7.3     | 7.5     | 7.9     | 8.2     | 8.8      | 8.8      | 9.1   | 9.4     | 9.0     | 9.2     | 9.0     | 8.0     | 6.7     | 6.9     | 6.8     | 6.8     | 7.1      | 6.7      | 6.5       | 7.8   |
| Northfield, Vt.....    | 7.1     | 7.1     | 6.9     | 7.3     | 7.8     | 7.6     | 7.2     | 7.4     | 8.3     | 8.9      | 10.3     | 10.5  | 10.6    | 10.8    | 10.5    | 9.9     | 8.1     | 7.3     | 7.5     | 7.6     | 7.7     | 7.6      | 7.1      | 7.4       | 8.3   |
| North Platte, Nebr.... | 6.6     | 5.9     | 5.5     | 5.4     | 5.6     | 5.6     | 6.0     | 5.9     | 5.3     | 5.0      | 5.0      | 6.1   | 8.1     | 9.8     | 10.0    | 9.8     | 9.6     | 8.5     | 6.5     | 6.4     | 5.7     | 5.9      | 6.1      | 6.1       | 6.7   |
| Oklahoma, Okla.....    | 8.2     | 8.5     | 8.5     | 8.3     | 8.7     | 8.6     | 8.7     | 9.1     | 9.1     | 10.3     | 11.6     | 13.2  | 13.1    | 13.3    | 13.3    | 13.2    | 12.4    | 11.0    | 8.7     | 8.0     | 7.9     | 7.9      | 8.2      | 8.3       | 9.9   |
| Omaha, Nebr.....       | 6.7     | 6.8     | 6.7     | 6.3     | 6.1     | 6.8     | 7.1     | 7.7     | 7.4     | 7.8      | 7.8      | 8.2   | 8.2     | 8.7     | 8.8     | 8.6     | 8.0     | 7.5     | 6.7     | 6.7     | 7.0     | 6.6      | 6.5      | 6.3       | 7.3   |
| Oswego, N. Y.....      | 9.4     | 9.5     | 9.6     | 9.8     | 10.1    | 10.5    | 10.6    | 10.9    | 10.9    | 10.8     | 11.0     | 11.2  | 11.0    | 10.3    | 9.8     | 10.0    | 9.2     | 9.9     | 10.4    | 10.4    | 10.6    | 10.9     | 10.8     | 9.9       | 10.3  |
| Palestine, Tex.....    | 5.6     | 5.8     | 5.9     | 5.1     | 4.8     | 4.9     | 4.7     | 4.6     | 5.0     | 6.3      | 7.5      | 7.9   | 8.4     | 8.6     | 7.9     | 7.9     | 7.6     | 7.1     | 5.0     | 5.2     | 5.8     | 6.0      | 6.1      | 6.3       | 6.2   |
| Parkersburg, W. Va.... | 4.3     | 4.6     | 4.5     | 4.3     | 4.1     | 4.0     | 3.8     | 3.8     | 4.1     | 4.8      | 5.6      | 6.0   | 6.8     | 6.4     | 6.6     | 6.3     | 5.9     | 5.1     | 4.6     | 4.5     | 4.5     | 3.6      | 3.8      | 4.1       | 4.8   |
| Pensacola, Fla.....    | 8.8     | 8.2     | 7.9     | 8.5     | 8.5     | 8.8     | 8.8     | 7.7     | 7.9     | 8.3      | 9.0      | 9.1   | 9.8     | 9.7     | 9.5     | 9.6     | 9.8     | 8.7     | 7.9     | 7.8     | 8.0     | 8.6      | 8.5      | 8.4       | 8.7   |
| Phoenix, Ariz.....     | 3.8     | 3.6     | 3.5     | 3.4     | 3.6     | 3.9     | 4.1     | 4.0     | 3.7     | 3.6      | 4.3      | 4.9   | 4.9     | 4.6     | 4.2     | 4.1     | 3.8     | 3.5     | 3.2     | 2.6     | 3.6     | 2.5      | 2.9      | 2.9       | 3.7   |
| Philadelphia, Pa.....  | 9.1     | 9.0     | 8.3     | 8.4     | 8.2     | 8.0     | 8.1     | 8.6     | 9.1     | 10.0     | 10.1     | 10.3  | 11.1    | 10.6    | 10.2    | 9.7     | 9.2     | 8.3     | 8.3     | 7.9     | 8.4     | 9.1      | 8.6      | 9.0       | 9.0   |
| Pierre, S. Dak.....    | 5.4     | 5.6     | 5.4     | 5.3     | 4.9     | 4.9     | 5.5     | 5.9     | 5.5     | 6.1      | 7.1      | 8.5   | 9.6     | 10.5    | 11.1    | 12.1    | 11.5    | 10.0    | 8.5     | 8.1     | 7.6     | 6.9      | 6.1      | 5.8       | 7.4   |
| Pittsburg, Pa.....     | 4.8     | 4.4     | 4.6     | 4.8     | 4.6     | 4.6     | 5.6     | 5.1     | 5.2     | 6.6      | 7.0      | 7.0   | 7.1     | 7.0     | 6.7     | 6.9     | 6.2     | 5.8     | 5.2     | 5.0     | 5.3     | 5.0      | 4.7      | 4.5       | 5.6   |
| Pocatello, Idaho.....  | 12.9    | 12.2    | 10.8    | 10.5    | 11.4    | 11.5    | 10.7    | 10.3    | 11.5    | 10.9     | 10.3     | 11.2  | 9.9     | 9.9     | 9.2     | 7.8     | 8.6     | 8.5     | 8.3     | 8.8     | 9.9     | 12.3     | 12.8     | 13.0      | 10.5  |
| Point Reyes Lt., Cal.. | 11.5    | 11.8    | 10.5    | 9.8     | 9.8     | 10.5    | 11.4    | 11.6    | 10.9    | 11.0     | 9.6      | 9.7   | 10.7    | 9.7     | 9.2     | 10.2    | 11.3    | 11.3    | 12.2    | 12.3    | 12.5    | 12.3     | 12.8     | 12.0      | 11.0  |
| Port Crescent, Wash..  | 2.5     | 3.1     | 3.2     | 2.6     | 2.6     | 2.8     | 2.6     | 2.8     | 2.3     | 2.1      | 2.3      | 2.0   | 2.0     | 2.4     | 2.8     | 3.2     | 2.9     | 2.8     | 3.0     | 3.0     | 2.7     | 2.8      | 2.5      | 2.5       | 2.7   |
| Port Huron, Mich....   | 9.9     | 9.3     | 9.6     | 9.5     | 8.9     | 9.1     | 9.6     | 9.4     | 10.2    | 11.0     | 10.9     | 11.2  | 12.5    | 11.9    | 11.4    | 11.1    | 10.7    | 9.6     | 9.8     | 10.2    | 10.7    | 10.7     | 10.5     | 10.4      | 10.3  |
| Portland, Me.....      | 5.7     | 5.9     | 5.6     | 6.0     | 5.8     | 6.1     | 5.8     | 6.1     | 6.0     | 6.5      | 6.7      | 7.2   | 7.6     | 7.8     | 7.7     | 7.0     | 6.0     | 6.0     | 6.3     | 6.2     | 6.1     | 5.9      | 5.8      | 5.6       | 6.3   |
| Portland, Oreg.....    | 7.1     | 7.7     | 7.6     | 8.5     | 9.7     | 10.5    | 10.3    | 10.8    | 10.2    | 9.5      | 8.2      | 7.7   | 8.0     | 8.9     | 9.8     | 9.4     | 10.3    | 10.5    | 9.1     | 8.8     | 7.8     | 8.5      | 8.9      | 8.4       | 9.0   |
| Pueblo, Colo.....      | 7.4     | 7.4     | 6.9     | 6.4     | 5.0     | 5.3     | 4.9     | 6.3     | 5.9     | 6.0      | 6.1      | 6.2   | 7.2     | 7.3     | 7.0     | 6.7     | 7.9     | 7.5     | 6.1     | 5.4     | 4.5     | 4.6      | 5.0      | 6.4       | 6.3   |
| Raleigh, N. C.....     | 5.2     | 5.3     | 5.0     | 5.6     | 5.3     | 4.9     | 4.8     | 5.2     | 5.7     | 6.8      | 6.6      | 6.5   | 7.0     | 6.7     | 7.0     | 6.3     | 5.2     | 4.2     | 4.7     | 5.3     | 5.0     | 5.0      | 5.0      | 5.0       | 5.6   |
| Rapid City, S. Dak...  | 6.9     | 6.6     | 6.2     | 6.4     | 5.8     | 6.4     | 6.6     | 6.4     | 6.4     | 5.8      | 5.5      | 5.6   | 7.2     | 8.7     | 9.1     | 9.1     | 9.2     | 7.6     | 5.4     | 4.2     | 4.8     | 5.8      | 6.1      | 6.2       | 6.6   |
| Red Bluff, Cal.....    | 5.1     | 5.4     | 5.8     | 5.0     | 4.5     | 3.9     | 4.0     | 4.4     | 4.9     | 5.3      | 5.1      | 5.3   | 6.4     | 6.3     | 6.7     | 6.6     | 6.5     | 6.4     | 6.3     | 5.5     | 4.8     | 4.9      | 4.9      | 5.0       | 5.4   |
| Richmond, Va.....      | 4.1     | 4.8     | 4.9     | 4.6     | 4.5     | 4.8     | 4.4     | 4.3     | 5.3     | 6.1      | 6.3      | 6.8   | 7.1     | 7.0     | 6.8     | 7.0     | 5.9     | 5.0     | 4.2     | 4.1     | 4.0     | 3.5      | 3.3      | 3.6       | 5.1   |
| Rochester, N. Y.....   | 6.0     | 5.8     | 5.5     | 5.9     | 6.0     | 6.2     | 6.4     | 6.6     | 7.2     | 7.5      | 7.8      | 8.2   | 8.5     | 8.2     | 7.7     | 7.4     | 6.6     | 6.1     | 6.0     | 6.1     | 6.0     | 6.1      | 6.0      | 5.8       | 6.7   |
| Roseburg, Oreg.....    | 2.8     | 2.6     | 2.9     | 2.5     | 2.3     | 2.7     | 2.3     | 2.1     | 2.9     | 3.0      | 3.3      | 2.9   | 2.9     | 4.1     | 4.5     | 4.5     | 4.3     | 4.3     | 3.5     | 3.2     | 2.9     | 3.2      | 2.8      | 2.5       | 3.1   |
| Sacramento, Cal.....   | 6.7     | 6.8     | 7.2     | 8.1     | 7.4     | 7.0     | 6.7     | 6.3     | 6.6     | 6.6      | 6.2      | 5.9   | 7.3     | 7.7     | 8.1     | 7.9     | 7.8     | 7.7     | 6.6     | 6.1     | 6.4     | 6.1      | 5.9      | 6.3       | 6.9   |
| St. Louis, Mo.....     | 9.4     | 10.0    | 10.2    | 10.1    | 10.5    | 10.0    | 9.8     | 9.7     | 10.0    | 10.4     | 10.3     | 10.7  | 10.8    | 10.7    | 11.0    | 11.1    | 10.8    | 9.9     | 9.8     | 9.8     | 10.5    | 10.3     | 10.2     | 10.0      | 10.3  |
| St. Paul, Minn.....    | 4.8     | 5.2     | 5.5     | 5.1     | 5.4     | 5.2     | 5.5     | 5.5     | 5.8     | 6.5      | 6.8      | 7.3   | 7.9     | 7.8     | 7.3     | 7.2     | 6.3     | 5.3     | 5.1     | 5.1     | 4.8     | 5.0      | 4.5      | 4.8       | 5.8   |
| Salt Lake City, Utah.. | 3.5     | 4.0     | 3.8     | 3.6     | 3.8     | 3.6     | 3.5     | 3.8     | 3.7     | 3.7      | 3.3      | 3.2   | 4.2     | 5.7     | 6.6     | 7.6     | 7.3     | 8.5     | 6.5     | 4.5     | 3.2     | 3.2      | 3.2      | 3.5       | 4.5   |
| San Antonio, Tex.....  | 6.7     | 6.1     | 5.5     | 5.6     | 5.6     | 5.8     | 6.3     | 6.0     | 6.4     | 6.1      | 8.3      | 9.3   | 10.6    | 10.6    | 10.8    | 11.3    | 11.1    | 10.2    | 8.7     | 7.9     | 8.7     | 8.3      | 7.6      | 6.9       | 7.9   |
| San Diego, Cal.....    | 3.6     | 3.6     | 3.3     | 3.7     | 3.6     | 3.6     | 3.4     | 3.9     | 3.9     | 4.2      | 3.6      | 3.0   | 4.0     | 5.0     | 8.2     | 9.7     | 10.3    | 10.8    | 10.0    | 7.9     | 5.4     | 4.4      | 3.7      | 3.5       | 5.3   |
| Sandusky, Ohio.....    | 7.8     | 7.5     | 6.4     | 6.7     | 7.3     | 7.2     | 7.4     | 7.5     | 7.5     | 7.9      | 7.5      | 7.5   | 7.2     | 7.6     | 7.6     | 7.4     | 7.3     | 6.6     | 7.1     | 7.1     | 7.3     | 7.6      | 7.6      | 7.7       | 7.4   |
| Sandy Hook, N. J.....  | 19.4    | 19.2    | 18.2    | 18.6    | 18.6    | 17.9    | 18.6    | 18.1    | 17.0    | 17.1     | 17.5     | 16.9  | 16.7    | 17.0    | 17.9    | 17.3    | 17.8    | 18.5    | 19.4    | 19.3    | 19.0    | 18.8     | 18.9     | 18.9      | 18.2  |
| San Francisco, Cal.... | 5.6     | 5.4     | 5.9     | 6.0     | 5.9     | 5.8     | 6.2     | 5.7     | 5.3     | 5.3      | 5.8      | 6.4   | 7.0     | 7.4     | 7.6     | 7.5     | 7.3     | 7.9     | 8.4     | 8.1     | 8.0     | 7.2      | 7.0      | 6.0       | 6.6   |
| San Luis Obispo, Cal.. | 3.7     | 3.2     | 2.8     | 3.3     | 3.4     | 3.0     | 3.1     | 3.4     | 3.5     | 3.6      | 3.8      | 3.8   | 4.6     | 5.2     | 4.9     | 6.2     | 6.1     | 6.0     | 5.9     | 5.4     | 4.8     | 3.8      | 3.5      | 3.8       | 4.2   |
| Santa Fe, N. Mex.....  | 4.7     | 4.9     | 5.0     | 4.4     | 5.3     | 5.2     | 5.5     | 5.7     | 5.4     | 5.3      | 6.1      | 6.3   | 7.0     | 7.7     | 7.7     | 7.7     | 8.2     | 7.5     | 5.7     | 3.9     | 4.4     | 4.2      | 4.6      | 5.0       | 5.7   |
| Sault Ste. Marie, Mich | 6.5     | 6.8     | 7.5     | 6.9     | 7.1     | 6.8     | 7.4     | 7.6     | 7.4     | 7.9      | 8.1      | 9.5   | 10.1    | 10.0    | 10.2    | 9.7     | 9.1     | 8.3     | 8.0     | 7.3     | 6.7     | 6.7      | 6.4      | 7.9       | 7.9   |
| Savannah, Ga.....      | 5.0     | 5.5     | 5.6     | 5.5     | 5.6     | 5.5     | 5.2     | 5.5     | 6.0     | 6.7      | 7.3      | 7.9   | 8.1     | 8.1     | 7.5     | 8.1     | 7.2     | 5.5     | 4.6     | 4.8     | 5.0     | 5.1      | 5.3      | 5.3       | 6.1   |
| Seattle, Wash.....     | 6.4     | 6.7     | 6.1     | 6.3     | 6.0     | 6.5     | 6.5     | 6.1     | 5.8     | 5.7      | 5.6      | 4.5   | 5.1     | 5.4     | 5.5     | 5.8     | 5.5     | 6.0     | 5.7     | 6.5     | 6.9     | 7.0      | 6.8      | 7.0       | 6.1   |
| Shreveport, La.....    | 5.7     | 5.5     | 4.9     | 5.1     | 5.1     | 5.5     | 5.9     | 5.4     | 5.0     | 5.4      | 6.3      | 6.3   | 7.0     | 7.5     | 7.7     | 8.1     | 7.8     | 7.0     | 6.2     | 6.2     | 6.4     | 6.7      | 7.3      | 6.8       | 6.3   |
| Sioux City, Iowa.....  | 8.7     | 9.2     | 8.9     | 9.1     | 9.4     | 9.6     | 10.1    | 9.7     | 9.8     | 9.1      | 9.0      | 9.3   | 10.2    | 10.7    | 11.6    | 11.6    | 11.5    | 10.7    | 10.1    | 10.1    | 8.9     | 8.9      | 9.1      | 8.8       | 9.7   |
| Spokane, Wash.....     | 4.7     | 5.8     | 5.5     | 5.4     | 5.5     | 6.2     | 6.4     | 5.9     | 5.3     | 5.4      | 5.8      | 5.8   | 5.8     | 6.2     | 6.4     | 6.8     | 5.9     | 5.3     | 5.0     | 5.5     | 5.7     | 5.7      | 5.5      | 5.7       | 5.7   |
| Springfield, Ill.....  | 9.2     | 9.0     | 9.2     | 8.7     | 8.8     | 8.6     | 9.2     | 8.9     | 8.8     | 9.6      | 9.6      | 9.6   | 10.5    | 10.6    | 10.9    | 10.9    | 9.8     | 8.3     | 8.7     | 9.0     | 9.3     | 9.6      | 9.5      | 9.3       | 9.4   |
| Springfield, Mo.....   | 8.7     | 8.8     | 8.7     | 9.5     | 9.6     | 10.0    | 9.9     | 9.9     | 10.3    | 11.0     | 11.1     | 12.5  | 13.0    | 12.0    | 11.7    | 11.5    | 11.1    | 9.8     | 8.9     | 9.4     | 10.4    | 10.2     | 9.9      | 9.5       | 10.3  |
| Tacoma, Wash.....      | 5.2     | 5.5     | 5.5     | 4.6     | 4.6     | 4.6     | 4.7     | 5.1     | 4.6     | 4.6      | 4.7      | 4.5   | 4.7     | 5.0     | 5.3     | 5.3     | 5.3     | 5.5     | 5.5     | 4.9     | 4.9     | 5.4      | 5.6      | 5.0       | 5.0   |
| Tampa, Fla.....        | 4.2     | 4.2     | 4.2     | 4.3     | 4.4     | 4.5     | 4.9     | 4.9     | 6.4     | 7.1      | 7.9      | 8.1   | 7.9     | 7.6     | 7.0     | 6.9     | 6.3     | 4.7     | 4.2     | 4.6     | 4.9     | 4.8      | 4.4      | 4.4       | 5.6   |
| Toledo, Ohio.....      | 8.0     | 8.0     | 7.7     | 7.7     | 7.8     | 8.1     | 8.1     | 8.2     | 8.8     | 9.1      | 9.5      | 8.7   | 8.9     | 9.1     | 9.4     | 9.2     | 8.8     | 8.9     | 8.4     | 8.9     | 8.9     | 9.6      | 9.0      | 8.8       | 8.7   |
| Vicksburg, Miss.....   | 6.2     | 6.0     | 5.7     | 6.3     | 6.2     | 5.9     | 5.8     | 5.9     | 5.8     | 5.7      | 6.5      | 6.7   | 7.5     | 7.8     | 7.6     | 6.8     | 6.2     | 5.3     | 5.2     | 5.7     | 6.1     | 6.0      | 6.4      | 6.3       | 6.2   |
| Vineyard Haven, Mass   | 8.3     | 8.0     | 7.7     | 7.6     | 7.4     | 7.6     | 8.2     | 8.7     | 9.7     | 9.7      | 9.9      | 9.8   | 9.7     | 9.6     | 9.2     | 8.2     | 7.2     | 7.6     | 7.7     | 7.8     | 7.7     | 7.9      | 8.4      | 8.1       | 8.4   |
| Walla Walla, Wash....  | 6.4     | 6.7     | 6.6     | 6.5     | 5.5     | 5.7     | 5.9     | 5.9     | 5.7     | 5.2      | 4.9      | 4.4   | 4.5     | 4.9     | 5.7     | 6.5     | 6.3     | 6.1     | 5.4     | 5.5     | 5.7     | 6.2      | 6.1      | 6.3       | 5.8   |
| Washington, D. C.....  | 4.0     | 3.9     | 4.0     | 4.3     | 3.8     | 3.6     |         |         |         |          |          |       |         |         |         |         |         |         |         |         |         |          |          |           |       |

TABLE VI.—Resultant winds from observations at 8 a. m. and 8 p. m., daily, during the month of November, 1899.

| Stations.                         | Component direction from— |    |    |    | Resultant.      |           | Stations.                           | Component direction from— |    |    |    | Resultant.      |           |
|-----------------------------------|---------------------------|----|----|----|-----------------|-----------|-------------------------------------|---------------------------|----|----|----|-----------------|-----------|
|                                   | N.                        | S. | E. | W. | Direction from— | Duration. |                                     | N.                        | S. | E. | W. | Direction from— | Duration. |
| <b>New England.</b>               |                           |    |    |    |                 |           | <b>Upper Mississippi Valley.</b>    |                           |    |    |    |                 |           |
| Eastport, Me.                     | 30                        | 7  | 6  | 27 | n. 42 w.        | 31        | St. Paul, Minn.                     | 18                        | 21 | 13 | 22 | s. 72 w.        | 10        |
| Portland, Me.                     | 32                        | 8  | 4  | 37 | n. 54 w.        | 41        | La Crosse, Wis. †                   | 9                         | 16 | 4  | 5  | s. 8 w.         | 7         |
| Northfield, Vt.                   | 30                        | 22 | 3  | 9  | n. 37 w.        | 10        | Davenport, Iowa                     | 19                        | 12 | 22 | 19 | n. 23 e.        | 7         |
| Boston, Mass.                     | 24                        | 10 | 5  | 34 | n. 64 w.        | 32        | Des Moines, Iowa                    | 22                        | 18 | 18 | 16 | n. 37 e.        | 4         |
| Nantucket, Mass.                  | 26                        | 12 | 7  | 30 | n. 59 w.        | 27        | Dubuque, Iowa                       | 21                        | 17 | 16 | 19 | n. 37 w.        | 5         |
| Woods Hole, Mass.                 | 26                        | 13 | 7  | 30 | n. 61 w.        | 26        | Keokuk, Iowa                        | 19                        | 24 | 16 | 18 | s. 22 w.        | 5         |
| Block Island, R. I.               | 27                        | 8  | 10 | 28 | n. 43 w.        | 26        | Calro, Ill.                         | 18                        | 22 | 15 | 16 | s. 14 w.        | 4         |
| New Haven, Conn.                  | 41                        | 3  | 9  | 18 | n. 13 w.        | 39        | Springfield, Ill.                   | 19                        | 25 | 12 | 17 | s. 40 w.        | 5         |
| <b>Middle Atlantic States.</b>    |                           |    |    |    |                 |           | Hannibal, Mo. †                     | 8                         | 13 | 9  | 8  | s. 11 e.        | 5         |
| Albany, N. Y.                     | 19                        | 23 | 3  | 23 | s. 79 w.        | 20        | St. Louis, Mo.                      | 20                        | 22 | 15 | 13 | s. 45 e.        | 3         |
| Binghamton, N. Y. †               | 18                        | 5  | 3  | 13 | n. 38 w.        | 16        | <b>Missouri Valley.</b>             |                           |    |    |    |                 |           |
| New York, N. Y.                   | 28                        | 4  | 10 | 34 | n. 45 w.        | 34        | Columbia, Mo. †                     | 10                        | 8  | 10 | 10 | n.              | 2         |
| Harrisburg, Pa. †                 | 14                        | 2  | 9  | 12 | n. 14 w.        | 12        | Kansas City, Mo.                    | 21                        | 23 | 22 | 13 | s. 77 e.        | 9         |
| Philadelphia, Pa.                 | 28                        | 10 | 9  | 27 | n. 45 w.        | 26        | Springfield, Mo.                    | 17                        | 30 | 22 | 7  | s. 49 e.        | 10        |
| Atlantic City, N. J.              | 21                        | 13 | 8  | 32 | n. 72 w.        | 25        | Lincoln, Nebr.                      | 22                        | 24 | 19 | 10 | s. 77 e.        | 9         |
| Cape May, N. J.                   | 28                        | 11 | 7  | 25 | n. 47 w.        | 25        | Omaha, Nebr.                        | 22                        | 21 | 17 | 10 | n. 82 e.        | 7         |
| Baltimore, Md.                    | 26                        | 17 | 11 | 21 | n. 48 w.        | 14        | Sioux City, Iowa                    | 13                        | 9  | 8  | 8  | n.              | 4         |
| Washington, D. C.                 | 26                        | 21 | 8  | 24 | n. 73 w.        | 17        | Pierre, S. Dak.                     | 18                        | 13 | 28 | 14 | n. 70 e.        | 15        |
| Lynchburg, Va.                    | 20                        | 14 | 17 | 23 | n. 45 w.        | 8         | Huron, S. Dak.                      | 11                        | 20 | 28 | 18 | s. 48 e.        | 14        |
| Norfolk, Va.                      | 28                        | 20 | 11 | 11 | n.              | 8         | Yankton, S. Dak. †                  | 7                         | 5  | 9  | 14 | n. 68 w.        | 5         |
| Richmond, Va.                     | 24                        | 23 | 8  | 15 | n. 82 w.        | 7         | <b>Northern Slope.</b>              |                           |    |    |    |                 |           |
| <b>South Atlantic States.</b>     |                           |    |    |    |                 |           | Havre, Mont.                        | 13                        | 18 | 10 | 37 | s. 80 w.        | 28        |
| Charlotte, N. C.                  | 18                        | 23 | 18 | 17 | s. 11 e.        | 5         | Miles City, Mont.                   | 9                         | 25 | 12 | 21 | s. 29 w.        | 18        |
| Hatteras, N. C.                   | 34                        | 10 | 5  | 20 | n. 32 w.        | 28        | Helena, Mont.                       | 3                         | 22 | 1  | 41 | s. 65 w.        | 44        |
| Kittyhawk, N. C.                  | 29                        | 14 | 5  | 22 | n. 48 w.        | 23        | Kallispell, Mont.                   | 17                        | 19 | 5  | 33 | s. 86 w.        | 28        |
| Raleigh, N. C.                    | 24                        | 13 | 15 | 25 | n. 42 w.        | 15        | Rapid City, S. Dak.                 | 26                        | 12 | 13 | 27 | n. 45 w.        | 30        |
| Wilmington, N. C.                 | 26                        | 10 | 18 | 21 | n. 11 w.        | 16        | Cheyenne, Wyo.                      | 22                        | 11 | 3  | 37 | n. 72 w.        | 36        |
| Charleston, S. C.                 | 23                        | 10 | 16 | 27 | n. 40 w.        | 17        | Lander, Wyo.                        | 9                         | 35 | 12 | 24 | s. 25 w.        | 29        |
| Augusta, Ga.                      | 23                        | 10 | 18 | 21 | n. 13 w.        | 13        | North Platte, Nebr.                 | 15                        | 19 | 14 | 28 | s. 74 w.        | 15        |
| Savannah, Ga.                     | 29                        | 9  | 25 | 16 | n. 24 e.        | 22        | <b>Middle Slope.</b>                |                           |    |    |    |                 |           |
| Jacksonville, Fla.                | 20                        | 10 | 22 | 30 | n. 11 e.        | 10        | Denver, Colo.                       | 17                        | 24 | 15 | 13 | s. 16 e.        | 7         |
| <b>Florida Peninsula.</b>         |                           |    |    |    |                 |           | Pueblo, Colo.                       | 19                        | 10 | 17 | 22 | n. 29 w.        | 10        |
| Jupiter, Fla.                     | 29                        | 7  | 37 | 6  | n. 55 e.        | 38        | Concordia, Kans.                    | 18                        | 22 | 15 | 12 | s. 37 e.        | 5         |
| Key West, Fla.                    | 34                        | 9  | 15 | 16 | n. 2 w.         | 25        | Dodge, Kans.                        | 31                        | 16 | 15 | 10 | n. 16 e.        | 16        |
| Tampa, Fla.                       | 17                        | 17 | 18 | 24 | w.              | 6         | Wichita, Kans.                      | 21                        | 26 | 15 | 9  | s. 50 e.        | 8         |
| <b>Eastern Gulf States.</b>       |                           |    |    |    |                 |           | Oklahoma, Okla.                     | 20                        | 29 | 9  | 12 | s. 18 w.        | 10        |
| Atlanta, Ga.                      | 15                        | 3  | 4  | 12 | n. 34 w.        | 14        | <b>Southern Slope.</b>              |                           |    |    |    |                 |           |
| Macon, Ga. †                      | 19                        | 2  | 9  | 5  | n. 13 e.        | 18        | Abilene, Tex.                       | 18                        | 28 | 20 | 17 | s. 11 e.        | 15        |
| Pensacola, Fla. †                 | 29                        | 16 | 13 | 19 | n. 25 w.        | 14        | Amarillo, Tex.                      | 27                        | 18 | 8  | 14 | n. 34 w.        | 11        |
| Mobile, Ala.                      | 19                        | 10 | 25 | 17 | n. 42 e.        | 12        | <b>Southern Plateau.</b>            |                           |    |    |    |                 |           |
| Montgomery, Ala.                  | 11                        | 6  | 9  | 10 | n. 11 w.        | 5         | El Paso, Tex.                       | 22                        | 5  | 16 | 31 | n. 42 w.        | 23        |
| Meridian, Miss. †                 | 21                        | 30 | 23 | 13 | n. 84 e.        | 10        | Santa Fe, N. Mex.                   | 28                        | 18 | 25 | 5  | s. 65 e.        | 23        |
| Vicksburg, Miss.                  | 20                        | 19 | 20 | 17 | n. 72 e.        | 3         | Flagstaff, Ariz.                    | 20                        | 11 | 22 | 18 | n. 24 e.        | 10        |
| New Orleans, La.                  | 13                        | 22 | 23 | 18 | s. 29 e.        | 10        | Phoenix, Ariz.                      | 14                        | 6  | 31 | 16 | n. 62 e.        | 17        |
| <b>Western Gulf States.</b>       |                           |    |    |    |                 |           | Yuma, Ariz.                         | 34                        | 6  | 22 | 13 | n. 18 e.        | 29        |
| Shreveport, La.                   | 13                        | 17 | 34 | 17 | s. 77 e.        | 18        | Independence, Cal.                  | 18                        | 25 | 13 | 22 | s. 52 w.        | 11        |
| Fort Smith, Ark.                  | 20                        | 18 | 14 | 22 | n. 76 w.        | 8         | <b>Middle Plateau.</b>              |                           |    |    |    |                 |           |
| Little Rock, Ark.                 | 24                        | 15 | 25 | 13 | n. 53 e.        | 15        | Carson City, Nev.                   | 12                        | 21 | 11 | 33 | s. 68 w.        | 24        |
| Corpus Christi, Tex.              | 7                         | 14 | 5  | 12 | s. 36 w.        | 9         | Winnemucca, Nev.                    | 23                        | 13 | 24 | 13 | n. 48 e.        | 15        |
| Fort Worth, Tex. †                | 16                        | 19 | 26 | 12 | s. 78 e.        | 14        | Cedar City, Utah.                   | 8                         | 31 | 27 | 7  | s. 41 e.        | 30        |
| Galveston, Tex.                   | 16                        | 27 | 16 | 16 | s.              | 11        | Salt Lake City, Utah.               | 15                        | 20 | 21 | 16 | s. 45 e.        | 7         |
| Palestine, Tex.                   | 26                        | 20 | 20 | 8  | n. 63 e.        | 13        | Grand Junction, Colo.               | 20                        | 14 | 21 | 22 | n. 9 w.         | 6         |
| San Antonio, Tex.                 | 13                        | 23 | 17 | 20 | s. 17 w.        | 10        | <b>Northern Plateau.</b>            |                           |    |    |    |                 |           |
| <b>Ohio Valley and Tennessee.</b> |                           |    |    |    |                 |           | Baker City, Oreg.                   | 3                         | 42 | 22 | 10 | s. 17 e.        | 41        |
| Chattanooga, Tenn.                | 19                        | 23 | 15 | 21 | s. 56 w.        | 7         | Boise, Idaho                        | 19                        | 15 | 22 | 21 | n. 14 e.        | 4         |
| Knoxville, Tenn.                  | 21                        | 21 | 15 | 18 | w.              | 3         | Pocatello, Idaho                    | 11                        | 31 | 10 | 14 | s. 11 w.        | 20        |
| Memphis, Tenn.                    | 17                        | 19 | 18 | 18 | s.              | 2         | Spokane, Wash.                      | 12                        | 27 | 26 | 6  | s. 53 e.        | 25        |
| Nashville, Tenn.                  | 4                         | 17 | 9  | 8  | s. 4 e.         | 13        | Walla Walla, Wash.                  | 10                        | 33 | 19 | 10 | s. 21 e.        | 25        |
| Lexington, Ky. †                  | 19                        | 22 | 13 | 17 | s. 53 w.        | 5         | <b>North Pacific Coast Region.</b>  |                           |    |    |    |                 |           |
| Louisville, Ky.                   | 10                        | 10 | 10 | 8  | e.              | 2         | Fort Canby, Wash.                   | 2                         | 23 | 27 | 5  | s. 46 e.        | 30        |
| Evansville, Ind. †                | 20                        | 21 | 19 | 12 | s. 82 e.        | 7         | Neah, Wash.                         | 2                         | 15 | 33 | 18 | s. 49 e.        | 20        |
| Indianapolis, Ind.                | 14                        | 21 | 24 | 11 | s. 62 e.        | 15        | Port Crescent, Wash. †              | 1                         | 14 | 12 | 11 | s. 4 e.         | 13        |
| Columbus, Ohio                    | 17                        | 17 | 21 | 18 | e.              | 3         | Seattle, Wash.                      | 3                         | 38 | 26 | 8  | s. 27 e.        | 39        |
| Pittsburg, Pa.                    | 21                        | 16 | 15 | 21 | n. 50 w.        | 8         | Tacoma, Wash.                       | 12                        | 33 | 9  | 20 | s. 28 w.        | 24        |
| Parkersburg, W. Va.               | 22                        | 14 | 12 | 21 | e.              | 2         | Portland, Oreg.                     | 7                         | 35 | 24 | 8  | s. 30 e.        | 32        |
| Elkins, W. Va.                    | 31                        | 14 | 4  | 21 | n. 45 w.        | 24        | Roseburg, Oreg.                     | 5                         | 34 | 23 | 11 | s. 22 e.        | 31        |
| <b>Lower Lake Region.</b>         |                           |    |    |    |                 |           | <b>Middle Pacific Coast Region.</b> |                           |    |    |    |                 |           |
| Buffalo, N. Y.                    | 16                        | 14 | 15 | 26 | n. 80 w.        | 11        | Eureka, Cal.                        | 3                         | 41 | 25 | 13 | s. 18 e.        | 40        |
| Oswego, N. Y.                     | 18                        | 20 | 20 | 16 | s. 37 e.        | 9         | Mount Tamalpais, Cal.               | 13                        | 18 | 18 | 25 | s. 58 w.        | 9         |
| Rochester, N. Y.                  | 13                        | 19 | 10 | 32 | s. 75 w.        | 23        | Red Bluff, Cal.                     | 15                        | 25 | 21 | 13 | s. 39 e.        | 13        |
| Erie, Pa.                         | 12                        | 25 | 11 | 25 | s. 47 w.        | 19        | Sacramento, Cal.                    | 13                        | 37 | 18 | 7  | s. 25 e.        | 26        |
| Cleveland, Ohio                   | 18                        | 27 | 17 | 14 | s. 18 e.        | 10        | San Francisco, Cal.                 | 16                        | 18 | 12 | 23 | s. 80 w.        | 11        |
| Sandusky, Ohio                    | 16                        | 22 | 16 | 21 | s. 40 w.        | 8         | <b>South Pacific Coast Region.</b>  |                           |    |    |    |                 |           |
| Toledo, Ohio                      | 18                        | 18 | 13 | 22 | w.              | 9         | Fresno, Cal.                        | 17                        | 13 | 17 | 28 | n. 70 w.        | 12        |
| Detroit, Mich.                    | 21                        | 16 | 13 | 22 | n. 61 w.        | 10        | Los Angeles, Cal.                   | 21                        | 9  | 7  | 32 | n. 64 w.        | 28        |
| <b>Upper Lake Region.</b>         |                           |    |    |    |                 |           | San Diego, Cal.                     | 37                        | 6  | 13 | 19 | n. 11 w.        | 32        |
| Alpena, Mich.                     | 23                        | 16 | 11 | 23 | n. 60 w.        | 14        | San Luis Obispo, Cal.               | 32                        | 13 | 4  | 16 | n. 32 w.        | 22        |
| Escanaba, Mich.                   | 23                        | 22 | 6  | 23 | n. 87 w.        | 17        | <b>West Indies.</b>                 |                           |    |    |    |                 |           |
| Grand Haven, Mich.                | 22                        | 16 | 22 | 15 | s. 49 e.        | 9         | Baseterre, St. Kitts Island         | 5                         | 6  | 48 | 2  | s. 80 e.        | 46        |
| Marquette, Mich.                  | 18                        | 16 | 9  | 28 | n. 84 w.        | 19        | Bridgetown, Barbados                | 5                         | 17 | 51 | 0  | s. 77 e.        | 51        |
| Port Huron, Mich.                 | 16                        | 22 | 13 | 24 | s. 61 w.        | 12        | Cienfuegos, Cuba                    | 47                        | 3  | 21 | 1  | n. 24 e.        | 48        |
| Sault Ste. Marie, Mich.           | 16                        | 14 | 22 | 21 | n. 27 e.        | 2         | Havana, Cuba                        | 20                        | 5  | 46 | 2  | n. 71 e.        | 46        |
| Chicago, Ill.                     | 17                        | 21 | 21 | 16 | s. 51 e.        | 6         | Kingston, Jamaica                   | 43                        | 3  | 29 | 1  | n. 35 e.        | 49        |
| Milwaukee, Wis.                   | 22                        | 16 | 9  | 25 | n. 69 w.        | 17        | Port of Spain, Trinidad             | 3                         | 6  | 55 | 0  | s. 87 e.        | 53        |
| Green Bay, Wis.                   | 19                        | 24 | 10 | 17 | s. 54 w.        | 9         | Puerto Principe, Cuba               | 39                        | 1  | 36 | 3  | n. 41 e.        | 50        |
| Duluth, Minn.                     | 21                        | 17 | 8  | 30 | n. 80 w.        | 22        | Roseau, Dominica, W. I.             | 19                        | 9  | 35 | 10 | n. 68 e.        | 17        |
| <b>North Dakota.</b>              |                           |    |    |    |                 |           | San Juan, Puerto Rico               | 5                         | 33 | 34 | 2  | s. 49 e.        | 42        |
| Moorhead, Minn.                   | 15                        | 25 | 20 | 19 | s. 6 w.         | 10        | Santiago de Cuba, Cuba              | 33                        | 14 | 21 | 6  | n. 38 e.        | 24        |
| Bismarck, N. Dak.                 | 20                        | 16 | 19 | 18 | n. 14 e.        | 4         | Santo Domingo, S. Domingo, W. I.    | 46                        | 8  | 5  | 5  | n.              | 38        |
| Williston, N. Dak.                | 15                        | 25 | 9  | 25 | s. 58 w.        | 19        | Willemstad, Curacao                 | 2                         | 5  | 56 | 0  | s. 87 e.        | 53        |

\* From observations at 8 p. m. only.

† From observations at 8 a. m. only.



TABLE VII.—Thunderstorms and auroras, November, 1899.

| States.                | No. of stations. |          |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Total. |       | T. A. T. |          |          |
|------------------------|------------------|----------|---|---|----|---|---|---|---|---|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------|-------|----------|----------|----------|
|                        |                  | 1        | 2 | 3 | 4  | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16  | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | No.    | Days. |          |          |          |
| Alabama.....           | 53               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    | 4  |    |    |     |    |    |    |    | 1  | 3  | 3  |    | 3  | 2  |    |    |    |    |    |        | 16    | 6        | T. A. T. |          |
| Arizona.....           | 53               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    | 1  | 2  |    | 1   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Arkansas.....          | 57               | T. A. T. |   |   |    |   |   | 2 |   |   | 1  | 2  |    | 2  | 6  | 1  |     | 1  | 7  |    | 8  | 7  | 8  |    |    |    |    | 1  |    |    |    |    |        | 46    | 12       | T. A. T. |          |
| California *.....      | 189              | T. A. T. |   |   |    |   |   |   |   | 1 |    |    |    | 1  |    |    | 2   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Colorado.....          | 73               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Connecticut.....       | 22               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Delaware.....          | 5                | T. A. T. |   | 2 |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Dist. of Columbia..... | 4                | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Florida.....           | 45               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    | 1  | 1  | 1  |    |    |    |    |    |    |    |    |        | 3     | 0        | T. A. T. |          |
| Georgia.....           | 54               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    | 4  | 4  |    |     |    |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |        | 9     | 0        | T. A. T. |          |
| Idaho.....             | 27               | T. A. T. |   |   |    |   |   |   |   | 5 | 2  |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |       | 7        | 0        | T. A. T. |
| Illinois.....          | 92               | T. A. T. |   |   |    |   |   |   |   |   | 2  | 1  | 20 | 26 | 1  |    | 20  | 2  | 1  |    |    | 8  |    |    |    |    |    |    |    |    | 5  |    | 86     | 10    | T. A. T. |          |          |
| Indiana.....           | 55               | T. A. T. |   |   |    |   |   |   |   |   | 3  |    | 9  | 5  |    |    |     |    | 1  |    |    | 2  |    |    |    |    |    |    |    |    |    |    | 1      | 1     | T. A. T. |          |          |
| Indian Territory.....  | 8                | T. A. T. |   |   |    |   |   |   |   |   |    |    |    | 1  |    |    |     | 1  | 2  | 1  | 1  | 1  |    |    |    |    |    |    |    |    |    |    | 7      | 0     | T. A. T. |          |          |
| Iowa.....              | 126              | T. A. T. |   |   |    | 1 |   | 1 |   |   |    |    | 24 | 5  |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 33    | 5        | T. A. T. |          |
| Kansas.....            | 74               | T. A. T. |   |   |    |   |   | 1 | 1 | 1 |    |    | 1  | 10 | 1  | 2  | 2   | 6  | 1  | 1  | 2  | 10 | 1  |    |    |    |    |    |    |    |    |    |        | 40    | 14       | T. A. T. |          |
| Kentucky.....          | 45               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    | 7  |    |     |    |    | 1  |    | 3  | 3  |    |    |    |    |    |    | 1  |    |    | 14     | 0     | T. A. T. |          |          |
| Louisiana.....         | 45               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    | 1  | 2  | 1  | 6  | 2  | 2  | 9  | 2  |    |    |    |    |    |    | 26     | 9     | T. A. T. |          |          |
| Maine.....             | 17               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Maryland.....          | 39               | T. A. T. |   | 8 |    |   |   |   |   |   | 1  |    |    |    | 2  |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 11    | 0        | T. A. T. |          |
| Massachusetts.....     | 54               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Michigan.....          | 107              | T. A. T. |   |   |    |   |   |   |   |   | 2  |    |    |    | 1  |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 3     | 2        | T. A. T. |          |
| Minnesota.....         | 64               | T. A. T. |   |   |    |   |   |   |   |   | 1  |    |    | 4  | 1  |    | 2   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 8     | 0        | T. A. T. |          |
| Mississippi.....       | 42               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    | 2  |    |     |    |    |    | 3  | 3  | 1  |    | 3  | 1  |    |    |    |    |    |    | 13     | 0     | T. A. T. |          |          |
| Missouri.....          | 89               | T. A. T. |   |   |    |   |   | 5 |   |   | 1  | 5  |    | 17 | 18 | 2  | 3   | 22 | 9  | 4  | 7  | 16 | 12 | 1  |    | 1  |    |    |    |    |    |    | 123    | 15    | T. A. T. |          |          |
| Montana.....           | 37               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    | 2   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 2     | 0        | T. A. T. |          |
| Nebraska.....          | 145              | T. A. T. |   | 1 |    |   | 1 |   |   |   |    |    |    | 1  |    |    | 2   | 1  |    |    |    | 2  | 2  | 1  | 1  |    |    |    |    |    |    |    | 13     | 3     | T. A. T. |          |          |
| Nevada.....            | 45               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| New Hampshire.....     | 20               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| New Jersey.....        | 50               | T. A. T. |   | 1 | 1  |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 1     | 2        | T. A. T. |          |
| New Mexico.....        | 38               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    | 3  |     |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 4     | 0        | T. A. T. |          |
| New York.....          | 108              | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |       | 0        | 0        | T. A. T. |
| North Carolina.....    | 56               | T. A. T. |   | 4 |    |   |   |   |   |   |    |    |    |    |    | 1  |     |    |    |    |    |    |    | 8  |    |    |    |    |    |    |    |    |        | 13    | 2        | T. A. T. |          |
| North Dakota.....      | 40               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    | 1  |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 1     | 1        | T. A. T. |          |
| Ohio.....              | 124              | T. A. T. |   |   |    |   |   |   |   |   | 1  | 11 |    |    | 7  |    |     | 1  |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |        | 20    | 4        | T. A. T. |          |
| Oklahoma.....          | 22               | T. A. T. |   |   |    |   |   | 1 |   |   |    |    |    | 3  |    |    |     | 1  | 2  | 4  | 2  | 1  |    |    |    |    |    |    |    |    |    |    |        | 5     | 5        | T. A. T. |          |
| Oregon.....            | 71               | T. A. T. |   | 1 |    |   |   |   |   |   | 6  |    |    |    |    |    |     |    |    | 1  |    |    | 3  |    |    |    |    |    |    |    |    |    |        | 14    | 6        | T. A. T. |          |
| Pennsylvania.....      | 100              | T. A. T. |   | 7 |    |   |   |   |   |   |    |    |    |    |    |    | 1   |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |        | 9     | 2        | T. A. T. |          |
| Rhode Island.....      | 8                | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 1     | 0        | T. A. T. |          |
| South Carolina.....    | 44               | T. A. T. |   | 1 |    | 1 |   |   |   |   |    |    |    |    |    | 1  |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 4     | 0        | T. A. T. |          |
| South Dakota.....      | 52               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    | 1  |    |    | 3   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 4     | 0        | T. A. T. |          |
| Tennessee.....         | 61               | T. A. T. |   |   |    |   |   |   |   |   |    | 3  |    |    | 15 | 3  |     |    |    |    |    | 3  | 1  |    |    |    |    |    |    |    |    |    |        | 25    | 5        | T. A. T. |          |
| Texas.....             | 83               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     | 2  | 2  | 13 | 3  | 1  |    | 3  | 4  | 1  |    |    |    |    |    |    |        | 29    | 8        | T. A. T. |          |
| Utah.....              | 34               | T. A. T. |   |   |    |   |   |   |   |   |    | 1  |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 1     | 0        | T. A. T. |          |
| Vermont.....           | 14               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 0     | 0        | T. A. T. |          |
| Virginia.....          | 47               | T. A. T. |   | 1 |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    | 5  |    |    |    |    |    |    |    |    |    |        | 6     | 0        | T. A. T. |          |
| Washington.....        | 55               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    | 1  |    | 3  |    |    |    |    |    |    | 6  | 2  |    |    |        | 12    | 4        | T. A. T. |          |
| West Virginia.....     | 38               | T. A. T. |   |   |    |   |   |   |   |   |    | 1  |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        | 3     | 0        | T. A. T. |          |
| Wisconsin.....         | 60               | T. A. T. |   |   |    |   |   |   |   |   | 7  |    |    | 2  | 2  |    |     | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |       | 12       | 4        | T. A. T. |
| Wyoming.....           | 18               | T. A. T. |   |   |    |   |   |   |   |   |    |    |    |    |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |        |       | 0        | 0        | T. A. T. |
| Sums.....              | 2,804            | T. A. T. | 0 | 2 | 23 | 2 | 1 | 0 | 1 | 9 | 1  | 1  | 24 | 30 | 3  | 93 | 111 | 23 | 13 | 56 | 33 | 25 | 29 | 61 | 44 | 23 | 20 | 8  | 1  | 6  | 4  | 1  | 12     | 661   | 18       | T. A. T. |          |

\* Reports from voluntary observers not received in time for use in preparing this table.

TABLE VIII.—Average hourly sunshine (in percentages), November, 1899.

| Stations.             |    | Instrument. | Percentages for each hour of local mean time ending with the respective hour. |   |    |    |    |    |    |      |       |    |    |    |    |     |   |       | Hours of sunshine. |           |                      |                    |
|-----------------------|----|-------------|---|---|----|----|----|----|----|------|-------|----|----|----|----|-----|---|-------|--------------------|-----------|----------------------|--------------------|
|                       |    |             | A. M.   |   |    |    |    |    |    |      | P. M. |    |    |    |    |     |   |       | Total.             |           |                      |                    |
|                       |    |             | 5   | 6 | 7  | 8  | 9  | 10 | 11 | Noon | 1     | 2  | 3  | 4  | 5  | 6   | 7 | 8     | Actual.            | Possible. | Percent of possible. | Personal estimate. |
|                       |    |             | 5   | 6 | 7  | 8  | 9  | 10 | 11 | Noon | 1     | 2  | 3  | 4  | 5  | 6   | 7 | 8     | Hours.             | Hours.    |                      |                    |
| Albany, N. Y.         | T. |             |   |   | 21 | 10 | 35 | 47 | 57 | 56   | 55    | 58 | 52 | 40 | 31 |     |   |       | 132.2              | 292.3     | 45                   | 41                 |
| Atlanta, Ga.          | T. |             |   |   | 45 | 43 | 55 | 65 | 65 | 69   | 67    | 68 | 71 | 64 | 60 | 67  |   |       | 193.3              | 312.2     | 62                   | 55                 |
| Atlantic City, N. J.  | P. |             |   |   | 49 | 54 | 69 | 82 | 83 | 83   | 81    | 80 | 72 | 58 | 50 |     |   |       | 214.2              | 301.5     | 71                   | 61                 |
| Baltimore, Md.        | T. |             |   |   | 37 | 33 | 42 | 58 | 67 | 65   | 67    | 67 | 55 | 47 | 43 |     |   |       | 163.4              | 301.5     | 54                   | 51                 |
| Binghamton, N. Y.     | T. |             |   |   | 8  | 6  | 13 | 18 | 34 | 34   | 40    | 38 | 39 | 36 | 16 |     |   |       | 80.7               | 294.9     | 27                   | 21                 |
| Bismarck, N. Dak.     | P. |             |   |   | 59 | 30 | 49 | 63 | 64 | 65   | 56    | 65 | 60 | 60 | 59 |     |   |       | 161.5              | 281.0     | 57                   | 51                 |
| Boise, Idaho          | T. |             |   |   | 44 | 28 | 35 | 41 | 45 | 45   | 45    | 44 | 41 | 37 | 23 |     |   |       | 115.4              | 289.7     | 40                   | 36                 |
| Boston, Mass.         | T. |             |   |   | 47 | 52 | 60 | 59 | 63 | 61   | 57    | 57 | 51 | 49 | 44 |     |   |       | 164.0              | 294.9     | 56                   | 45                 |
| Buffalo, N. Y.        | T. |             |   |   | 16 | 14 | 21 | 30 | 33 | 38   | 29    | 35 | 34 | 25 | 14 |     |   |       | 81.3               | 292.3     | 28                   | 14                 |
| Cedar City, Utah      | T. |             |   |   | 55 | 62 | 73 | 83 | 89 | 93   | 89    | 87 | 81 | 75 | 54 | 0   |   |       | 238.5              | 304.0     | 78                   | 65                 |
| Charleston, S. C.     | T. |             |   |   | 41 | 37 | 46 | 57 | 59 | 74   | 70    | 64 | 58 | 42 | 38 | 62  |   |       | 169.9              | 314.0     | 54                   | 46                 |
| Chattanooga, Tenn.    | T. |             |   |   | 36 | 18 | 34 | 47 | 59 | 60   | 65    | 59 | 60 | 49 | 36 | 75  |   |       | 148.5              | 310.1     | 48                   | 47                 |
| Cheyenne, Wyo.        | P. |             |   |   | 37 | 39 | 68 | 70 | 70 | 60   | 66    | 58 | 62 | 37 |    |     |   | 175.5 | 297.3              | 59        | 52                   |                    |
| Chicago, Ill.         | T. |             |   |   | 21 | 17 | 31 | 34 | 44 | 47   | 54    | 54 | 40 | 29 | 28 |     |   |       | 111.1              | 294.9     | 38                   | 35                 |
| Cincinnati, Ohio      | T. |             |   |   | 49 | 48 | 47 | 52 | 56 | 57   | 50    | 45 | 47 | 49 | 47 |     |   |       | 150.0              | 301.5     | 50                   | 51                 |
| Cleveland, Ohio       | T. |             |   |   | 13 | 10 | 10 | 15 | 23 | 32   | 31    | 29 | 20 | 20 | 23 |     |   |       | 62.5               | 294.9     | 21                   | 26                 |
| Columbia, Mo.         | T. |             |   |   | 37 | 43 | 60 | 70 | 81 | 82   | 80    | 72 | 70 | 59 | 51 |     |   |       | 200.4              | 301.5     | 66                   | 39                 |
| Columbus, Ohio        | T. |             |   |   | 25 | 27 | 33 | 40 | 56 | 59   | 60    | 58 | 56 | 45 | 37 |     |   |       | 140.2              | 299.7     | 47                   | 41                 |
| Denver, Colo.         | P. |             |   |   | 78 | 73 | 81 | 87 | 87 | 81   | 79    | 84 | 85 | 79 | 71 |     |   |       | 242.8              | 299.7     | 81                   | 74                 |
| Des Moines, Iowa      | T. |             |   |   | 36 | 30 | 42 | 58 | 59 | 64   | 70    | 69 | 70 | 55 | 49 |     |   |       | 166.8              | 294.9     | 57                   | 46                 |
| Detroit, Mich.        | T. |             |   |   | 21 | 18 | 38 | 50 | 60 | 68   | 64    | 55 | 37 | 31 | 17 |     |   |       | 131.5              | 294.9     | 45                   | 31                 |
| Dodge, Kans.          | P. |             |   |   | 51 | 50 | 54 | 61 | 63 | 57   | 53    | 42 | 61 | 66 | 58 | 100 |   |       | 177.7              | 304.0     | 58                   | 49                 |
| Dubuque, Iowa         | T. |             |   |   | 23 | 17 | 19 | 34 | 49 | 48   | 52    | 51 | 49 | 43 | 43 |     |   |       | 117.8              | 294.9     | 40                   | 40                 |
| Eastport, Me.         | P. |             |   |   | 14 | 30 | 29 | 45 | 45 | 41   | 45    | 46 | 40 | 33 | 34 |     |   |       | 108.8              | 287.2     | 38                   | 28                 |
| Elkins, W. Va.        | T. |             |   |   | 12 | 7  | 15 | 35 | 54 | 56   | 52    | 53 | 45 | 47 | 44 |     |   |       | 120.5              | 301.5     | 40                   | 34                 |
| Erie, Pa.             | T. |             |   |   | 6  | 3  | 7  | 16 | 26 | 35   | 41    | 43 | 35 | 20 | 31 |     |   |       | 74.4               | 294.9     | 25                   | 27                 |
| Escondido, Mich.      | T. |             |   |   |    |    |    |    |    |      |       |    |    |    |    |     |   |       |                    |           |                      |                    |
| Eureka, Cal.          | P. |             |   |   | 18 | 16 | 32 | 42 | 42 | 43   | 33    | 35 | 32 | 32 | 19 |     |   |       | 96.9               | 297.3     | 33                   | 27                 |
| Fresno, Cal.          | T. |             |   |   | 0  | 11 | 31 | 38 | 49 | 53   | 57    | 61 | 56 | 41 | 25 | 0   |   |       | 128.6              | 305.7     | 41                   | 27                 |
| Galveston, Tex.       | P. |             |   |   | 18 | 41 | 67 | 64 | 74 | 54   | 69    | 76 | 72 | 70 | 53 | 24  |   |       | 196.1              | 321.7     | 61                   | 50                 |
| Grand Junction, Colo. | P. |             |   |   | 79 | 77 | 78 | 84 | 90 | 89   | 87    | 80 | 84 | 65 | 71 |     |   |       | 246.2              | 301.5     | 82                   | 72                 |
| Harrisburg, Pa.       | T. |             |   |   | 28 | 30 | 32 | 42 | 45 | 54   | 62    | 64 | 60 | 38 | 31 |     |   |       | 136.9              | 299.7     | 46                   | 47                 |
| Helena, Mont.         | P. |             |   |   | 41 | 16 | 35 | 54 | 58 | 49   | 56    | 61 | 56 | 47 | 43 |     |   |       | 135.4              | 281.0     | 48                   | 42                 |
| Huron, S. Dak.        | T. |             |   |   | 61 | 52 | 50 | 56 | 63 | 69   | 75    | 69 | 59 | 61 | 62 |     |   |       | 178.9              | 299.7     | 62                   | 52                 |
| Indianapolis, Ind.    | T. |             |   |   | 38 | 27 | 32 | 44 | 51 | 55   | 49    | 52 | 40 | 38 | 37 |     |   |       | 137.4              | 299.7     | 43                   | 33                 |
| Jacksonville, Fla.    | T. |             |   |   | 42 | 43 | 57 | 66 | 77 | 80   | 80    | 77 | 71 | 56 | 40 | 48  |   |       | 203.1              | 319.7     | 64                   | 62                 |
| Jupiter, Fla.         | T. |             |   |   | 34 | 44 | 65 | 75 | 84 | 87   | 83    | 77 | 68 | 52 | 34 | 29  |   |       | 208.8              | 325.0     | 64                   | 50                 |
| Kalamazoo, Mich.      | T. |             |   |   | 38 | 10 | 15 | 24 | 37 | 42   | 40    | 39 | 38 | 18 | 15 |     |   |       | 80.6               | 278.0     | 29                   | 31                 |
| Kansas City, Mo.      | P. |             |   |   | 52 | 43 | 46 | 52 | 44 | 40   | 37    | 50 | 57 | 49 | 46 |     |   |       | 140.2              | 301.5     | 47                   | 39                 |
| Key West, Fla.        | T. |             |   |   | 34 | 37 | 55 | 71 | 80 | 82   | 81    | 77 | 71 | 61 | 45 | 35  |   |       | 207.8              | 328.2     | 63                   | 53                 |
| Knoxville, Tenn.      | T. |             |   |   | 49 | 43 | 47 | 46 | 55 | 57   | 59    | 59 | 48 | 40 | 38 | 50  |   |       | 152.6              | 308.3     | 49                   | 43                 |
| Lexington, Ky.        | T. |             |   |   | 20 | 19 | 39 | 52 | 59 | 58   | 56    | 61 | 46 | 33 | 23 | 100 |   |       | 131.6              | 304.0     | 43                   | 33                 |
| Little Rock, Ark.     | T. |             |   |   | 42 | 42 | 62 | 70 | 68 | 72   | 71    | 75 | 63 | 46 | 34 | 50  |   |       | 185.8              | 310.1     | 60                   | 51                 |
| Los Angeles, Cal.     | P. |             |   |   | 37 | 43 | 64 | 77 | 79 | 79   | 81    | 82 | 78 | 66 | 51 | 50  |   |       | 214.0              | 312.2     | 69                   | 52                 |
| Louisville, Ky.       | T. |             |   |   | 26 | 17 | 28 | 46 | 52 | 48   | 51    | 47 | 43 | 34 | 31 | 0   |   |       | 119.8              | 304.0     | 39                   | 40                 |
| Macon, Ga.            | T. |             |   |   | 37 | 36 | 58 | 64 | 70 | 73   | 76    | 75 | 66 | 54 | 45 | 50  |   |       | 190.1              | 314.0     | 61                   | 51                 |
| Meridian, Miss.       | T. |             |   |   | 55 | 50 | 52 | 57 | 67 | 71   | 68    | 67 | 62 | 55 | 54 | 83  |   |       | 190.0              | 315.9     | 60                   | 49                 |
| Minneapolis, Minn.    | T. |             |   |   | 62 | 38 | 40 | 44 | 50 | 51   | 51    | 49 | 44 | 40 | 44 |     |   |       | 130.4              | 287.2     | 45                   | 39                 |
| Mount Tamalpais, Cal. | P. |             |   |   | 31 | 30 | 31 | 33 | 38 | 35   | 36    | 40 | 35 | 39 | 32 | 100 |   |       | 105.9              | 304.0     | 35                   | 20                 |
| Nashville, Tenn.      | T. |             |   |   | 28 | 23 | 23 | 25 | 28 | 38   | 51    | 51 | 44 | 37 | 37 | 50  |   |       | 109.6              | 308.3     | 36                   | 41                 |
| New Haven, Conn.      | T. |             |   |   | 35 | 38 | 54 | 58 | 58 | 62   | 63    | 58 | 58 | 42 | 37 |     |   |       | 155.5              | 297.3     | 52                   | 55                 |
| New Orleans, La.      | T. |             |   |   | 25 | 20 | 41 | 63 | 71 | 77   | 74    | 72 | 70 | 65 | 57 | 84  |   |       | 186.0              | 319.7     | 58                   | 57                 |
| New York, N. Y.       | T. |             |   |   | 52 | 50 | 62 | 70 | 74 | 72   | 70    | 68 | 58 | 47 | 42 |     |   |       | 183.6              | 297.3     | 62                   | 56                 |
| Northfield, Vt.       | P. |             |   |   | 28 | 17 | 22 | 28 | 40 | 40   | 39    | 41 | 39 | 32 | 20 |     |   |       | 93.7               | 289.7     | 32                   | 23                 |
| Oklahoma, Okla.       | T. |             |   |   | 60 | 56 | 59 | 58 | 58 | 62   | 60    | 59 | 59 | 56 | 47 | 50  |   |       | 178.6              | 310.1     | 58                   | 49                 |
| Parkorsburg, W. Va.   | T. |             |   |   | 11 | 13 | 25 | 40 | 52 | 60   | 61    | 61 | 47 | 25 | 18 |     |   |       | 120.3              | 301.5     | 40                   | 40                 |
| Phoenix, Ariz.        | P. |             |   |   | 76 | 82 | 89 | 92 | 90 | 88   | 90    | 94 | 91 | 86 | 77 | 75  |   |       | 273.6              | 314.0     | 87                   | 70                 |
| Philadelphia, Pa.     | T. |             |   |   | 58 | 58 | 63 | 70 | 73 | 76   | 72    | 70 | 62 | 55 | 47 |     |   |       | 194.5              | 299.7     | 65                   | 54                 |
| Pittsburg, Pa.        | T. |             |   |   | 23 | 20 | 23 | 26 | 35 | 39   | 38    | 34 | 31 | 6  | 8  |     |   |       | 78.7               | 297.3     | 26                   | 35                 |
| Pocatello, Idaho      | T. |             |   |   | 37 | 33 | 39 | 48 | 55 | 57   | 55    | 59 | 49 | 38 | 37 |     |   |       | 138.7              | 292.3     | 47                   | 36                 |
| Portland, Me.         | T. |             |   |   | 28 | 29 | 44 | 56 | 56 | 55   | 55    | 52 | 43 | 37 | 31 |     |   |       | 135.4              | 299.7     | 47                   | 41                 |
| Portland, Oreg.       | T. |             |   |   | 0  | 5  | 12 | 19 | 26 | 28   | 31    | 28 | 19 | 9  | 5  |     |   |       | 53.5               | 284.1     | 19                   | 21                 |
| Pueblo, Colo.         | T. |             |   |   | 47 | 47 | 71 | 85 | 86 | 87   | 87    | 84 | 84 | 71 | 59 | 100 |   |       | 229.2              | 304.0     | 75                   | 61                 |
| Raleigh, N. C.        | T. |             |   |   | 50 | 47 | 64 | 67 | 76 | 80   | 77    | 75 | 72 | 69 | 50 |     |   |       |                    |           |                      |                    |



TABLE IX.—Accumulated amounts of precipitation for each 5 minutes, for storms in which the rate of fall equaled or exceeded 0.25 in any 5 minutes, or 0.75 in 1 hour during November, 1899, at all stations furnished with self-registering gages.

| Stations.             | Date. | Total duration. |            | Total amt of precipi-<br>tation. | Excessive rate. |            | Amount be-<br>fore exces-<br>sive began. | Depths of precipitation (in inches) during periods of time as indicated. |         |         |         |         |         |         |         |         |         |         |         |          |          |
|-----------------------|-------|-----------------|------------|----------------------------------|-----------------|------------|--|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
|                       |       | From—           | To—        |                                  | Began—          | Ended—     |  | 5 min.   | 10 min. | 15 min. | 20 min. | 25 min. | 30 min. | 35 min. | 40 min. | 45 min. | 50 min. | 60 min. | 80 min. | 100 min. | 120 min. |
| Albany, N. Y.         | 3-4   |                 |            | 0.65                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Atlanta, Ga.          | 22    |                 |            | 0.95                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.11    |          |          |
| Atlantic City, N. J.  | 23    |                 |            | 0.37                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.46    |          |          |
| Baltimore, Md.        | 3-4   |                 |            | 0.65                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.09    |          |          |
| Binghamton, N. Y.     | 3     |                 |            | 0.25                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.17    |          |          |
| Bismarek, N. Dak.     | 16    |                 |            | 0.28                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.16    |          |          |
| Boise, Idaho          | 12    |                 |            | 0.52                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.22    |          |          |
| Boston, Mass.         | 4     |                 |            | 0.74                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.24    |          |          |
| Buffalo, N. Y.        | 3-4   |                 |            | 0.53                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.29    |          |          |
| Cairo, Ill.           | 18    |                 |            | 2.05                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.23    |          |          |
|                       |       |                 |            |                                  |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.62    |          |          |
| Charleston, S. C.     | 25    | 11.36 a.m.      | 8.16 p.m.  | 3.52                             | 4.45 p.m.       | 5.35 p.m.  | 1.18                                     | 0.20   | 0.26    | 0.31    | 0.39    | 0.43    | 0.53    | 0.55    | 0.57    | 0.66    | 0.74    |         |         |          |          |
|                       |       |                 |            |                                  | 5.35 p.m.       | 6.25 p.m.  |  | 0.85   | 0.95    | 1.04    | 1.06    | 1.13    | 1.19    | 1.23    | 1.28    | 1.32    | 1.37    |         |         |          |          |
|                       |       |                 |            |                                  | 6.25 p.m.       | 6.50 p.m.  |  | 1.46   | 1.61    | 1.81    | 2.08    | 2.18    | 2.21    | 2.21    | 2.22    |         |         |         |         |          |          |
| Chicago, Ill.         | 14    |                 |            | 0.46                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.29    |          |          |
| Cincinnati, Ohio      | 22    |                 |            | 0.83                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.22    |          |          |
| Cleveland, Ohio       | 3     |                 |            | 0.23                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.07    |          |          |
| Columbia, Mo.         | 17    |                 |            | 0.37                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.34    |          |          |
| Columbus, Ohio        | 22-23 |                 |            | 0.64                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.21    |          |          |
| Denver, Colo.         | 20-21 |                 |            | T.                               |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Des Moines, Iowa.     | 13    |                 |            | 0.64                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Detroit, Mich.        | 3     |                 |            | 0.66                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | *       |          |          |
| Dodge, Kans.          | 19-20 |                 |            | 0.69                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.14    |          |          |
| Duluth, Minn.         | 16    |                 |            | 0.30                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.10    |          |          |
| Eastport, Me.         | 1-2   |                 |            | 0.39                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.09    |          |          |
| Elkins, W. Va.        | 22-23 |                 |            | 0.29                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.23    |          |          |
| Erie, Pa.             | 14    |                 |            | 0.64                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         | 0.14    |          |          |
| Escanaba, Mich.       | 20    |                 |            | 0.05                             |                 |            |  |  |         |         |         |         | 0.05    |         |         |         |         |         | 0.21    |          |          |
| Evansville, Ind.      | 22    |                 |            | 1.53                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Fort Worth, Tex.      | 19-20 | D. N.           | 1.30 a.m.  | 2.18                             | 2.55 p.m.       | 3.30 p.m.  | 0.43                                     | 0.20   | 0.34    | 0.44    | 0.51    | 0.58    | 0.65    | 0.70    | 0.71    | 0.73    | 0.74    | 0.46    |         |          |          |
| Fresno, Cal.          | 21    |                 |            | 0.70                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.76    |         |          |          |
| Galveston, Tex.       | 19-20 | 9.56 p.m.       | 1.10 a.m.  | 2.34                             | 10.27 p.m.      | 11.00 p.m. | 0.01                                     | 0.47   | 1.06    | 1.54    | 1.70    | 1.81    | 1.85    | 1.88    | 1.90    | 1.90    | 1.91    | 0.32    |         |          |          |
| Grand Junction, Colo. | 14-15 |                 |            | 0.06                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 1.93    | 1.99    | 2.07     | 2.20     |
| Hannibal, Mo.         | 20-21 |                 |            | 0.99                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | *       |         |          |          |
| Harrisburg, Pa.       | 22-23 |                 |            | 0.62                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.49    |         |          |          |
| Hatteras, N. C.       | 3     | 10.50 a.m.      | 2.30 p.m.  | 1.02                             | 11.35 a.m.      | 11.55 a.m. | 0.10                                     | 0.09   | 0.23    | 0.35    | 0.40    | 0.45    | 0.50    |         |         |         |         | 0.12    |         |          |          |
| Huron, S. Dak.        | 16    |                 |            | 0.09                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Indianapolis, Ind.    | 22-23 |                 |            | 1.16                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.09    |         |          |          |
| Jacksonville, Fla.    | 7-8   |                 |            | 0.06                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.19    |         |          |          |
| Jupiter, Fla.         | 5     |                 |            | 0.46                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.05    |         |          |          |
| Kalspell, Mont.       | 29    |                 |            | 0.31                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.39    |         |          |          |
| Kansas City, Mo.      | 21    |                 |            | 0.57                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | *       |         |          |          |
| Key West, Fla.        | 25    |                 |            | 0.64                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.39    |         |          |          |
| Knoxville, Tenn.      | 22-23 |                 |            | 0.45                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.36    |         |          |          |
| Lexington, Ky.        | 22    |                 |            | 0.64                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.23    |         |          |          |
| Lincoln, Nebr.        | 20-21 |                 |            | 0.48                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | *       |         |          |          |
| Little Rock, Ark.     | 24-25 |                 |            | 1.96                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.21    |         |          |          |
| Los Angeles, Cal.     | 21    |                 |            | 0.52                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.08    |         |          |          |
| Louisville, Ky.       | 22    |                 |            | 0.83                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.21    |         |          |          |
| Macon, Ga.            | 25    |                 |            | 0.79                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.24    |         |          |          |
| Memphis, Tenn.        | 25-27 |                 |            | 1.45                             |                 |            |  |  |         |         |         |         |         | 0.30    |         |         |         |         |         |          |          |
| Meridian, Miss.       | 24-25 |                 |            | 1.85                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Milwaukee, Wis.       | 13-14 |                 |            | 1.07                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.16    |         |          |          |
| Montgomery, Ala.      | 25    | 2.18 a.m.       | 10.57 a.m. | 1.06                             | 10.00 a.m.      | 10.45 a.m. | 0.40                                     | 0.03   | 0.07    | 0.10    | 0.14    | 0.20    | 0.32    | 0.43    | 0.56    | 0.63    | 0.65    | 0.26    |         |          |          |
| Nantucket, Mass.      | 3-4   |                 |            | 1.12                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Nashville, Tenn.      | 21    |                 |            | 0.53                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.37    |         |          |          |
| New Orleans, La.      | 24-25 |                 |            | 0.67                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.32    |         |          |          |
| New York, N. Y.       | 3-4   |                 |            | 0.94                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |
| Norfolk, Va.          | 23    |                 |            | 0.47                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.17    |         |          |          |
| Northfield, Vt.       | +     |                 |            | 1.39                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.35    |         |          |          |
| Oklahoma, Okla.       | 18    | 4.16 a.m.       | 6.30 p.m.  | 2.14                             | 4.58 a.m.       | 5.55 a.m.  | 0.48                                     | 0.07   | 0.17    | 0.41    | 0.42    | 0.42    | 0.42    | 0.43    | 0.43    | 0.44    | 0.48    | 0.25    |         |          |          |
| Omaha, Nebr.          | 20-21 |                 |            | 0.79                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.64    | 0.81    | 1.01     | 1.26     |
| Parkersburg, W. Va.   | 19    |                 |            | 0.54                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.22    |         |          |          |
| Philadelphia, Pa.     | 3     |                 |            | 0.58                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.17    |         |          |          |
| Pittsburg, Pa.        | 22-23 |                 |            | 0.73                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.10    |         |          |          |
| Pocatello, Idaho      | 11    |                 |            | 0.22                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.16    |         |          |          |
| Portland, Me.         | 4     |                 |            | 0.79                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.20    |         |          |          |
| Portland, Oreg.       | 27    |                 |            | 1.07                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.16    |         |          |          |
| Raleigh, N. C.        | 27    |                 |            | 0.18                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.46    |         |          |          |
| Richmond, Va.         | 3     |                 |            | 0.98                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.07    |         |          |          |
| Rochester, N. Y.      | +     |                 |            | 0.66                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.41    |         |          |          |
| St. Louis, Mo.        | 14    |                 |            | 0.27                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.11    |         |          |          |
| St. Paul, Minn.       | 16    |                 |            | 0.46                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.14    |         |          |          |
| Salt Lake City, Utah  | 16    |                 |            | 0.23                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.22    |         |          |          |
| San Diego, Cal.       | 14    |                 |            | 0.36                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.13    |         |          |          |
| San Francisco, Cal.   | 21    |                 |            | 1.51                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.10    |         |          |          |
| Savannah, Ga.         | 25    |                 |            | 2.01                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.30    |         |          |          |
| Seattle, Wash.        | 28-29 |                 |            | 0.79                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.61    |         |          |          |
| Spokane, Wash.        | 29    |                 |            | 0.92                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.14    |         |          |          |
| Tampa, Fla.           | 24    |                 |            | 0.12                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | *       |         |          |          |
| Vicksburg             | 24-26 |                 |            | 0.73                             |                 |            |  |  |         |         |         |         |         |         |         |         |         | 0.05    |         |          |          |
| Washington, D. C.     | 3     |                 |            | 0.63                             |                 |            |  |  |         |         |         |         |         |         |         |         |         |         |         |          |          |

TABLE X.—Excessive precipitation, by stations, for November, 1899.

| Stations.                | Monthly rainfall<br>10 inches, or more. | Rainfall 2.50<br>inches, or<br>more, in 24<br>hours. |       | Rainfall of 1 inch,<br>or more, in one<br>hour. |             |      |
|--------------------------|---|--|-------|---|-------------|------|
|                          |   | Amt.   | Day.  | Amt.  | Time.       | Day. |
| <i>Alabama.</i>          |   |  |       |   |             |      |
| Bermuda .....            | <i>Inches.</i>                          | <i>Inches.</i>                                       |       | <i>Ins.</i>                                     | <i>A.m.</i> |      |
| Citronelle .....         |   | 2.60   | 22    |   |             |      |
| Healing Springs .....    |   | 3.96   | 24-25 |   |             |      |
| Wilson .....             |   | 3.60   | 25    |   |             |      |
| Do .....                 |   | 4.03   | 25    | 1.08  | 0 30        | 22   |
| <i>Arkansas.</i>         |   |  |       |   |             |      |
| Canton .....             |   | 4.74   | 18    |   |             |      |
| Dallas .....             |   | 2.85   | 18    |   |             |      |
| Hardy .....              |   | 4.41   | 18    |   |             |      |
| Mossville .....          |   | 3.17   | 18    |   |             |      |
| <i>California.</i>       |   |  |       |   |             |      |
| Bear Valley .....        | 11.91                                   | 2.55   | 9     |   |             |      |
| Bowman .....             | 12.53                                   | 5.68   | 8-10  |   |             |      |
| Cahto .....              | 30.13                                   |  |       |   |             |      |
| Crescent City .....      | 30.15                                   | 6.42   | 26-27 |   |             |      |
| Edmonton .....           | 13.09                                   | 2.92   | 9     |   |             |      |
| Eureka .....             | 14.80                                   | 3.38   | 25-26 |   |             |      |
| Fort Bragg .....         | 13.33                                   |  |       |   |             |      |
| Fort Ross .....          | 14.74                                   | 2.65   | 10    |   |             |      |
| Do .....                 |   | 2.80   | 21    |   |             |      |
| Georgetown .....         | 10.33                                   |  |       |   |             |      |
| Grass Valley .....       | 11.58                                   |  |       |   |             |      |
| Greenville .....         |   | 3.83   | 10    |   |             |      |
| Healdsburg .....         |   | 2.81   | 10    |   |             |      |
| Laporte .....            | 15.96                                   | 5.98   | 9-10  |   |             |      |
| Mount Tamalpais .....    |   | 2.51   | 20-21 |   |             |      |
| Nevada City .....        | 10.85                                   |  |       |   |             |      |
| North San Juan .....     | 11.92                                   |  |       |   |             |      |
| Quincy .....             |   | 3.06   | 10    |   |             |      |
| Shasta .....             | 11.29                                   |  |       |   |             |      |
| Upper Mattole .....      | 32.85                                   | 2.97   | 5     |   |             |      |
| Do .....                 |   | 3.08   | 9     |   |             |      |
| Do .....                 |   | 8.92   | 27-29 |   |             |      |
| <i>Colorado.</i>         |   |  |       |   |             |      |
| Holly .....              |   | 3.00   | 21    |   |             |      |
| <i>Idaho.</i>            |   |  |       |   |             |      |
| Priest River .....       | 10.42                                   |  |       |   |             |      |
| <i>Indian Territory.</i> |   |  |       |   |             |      |
| Hartshorne .....         |   | 3.10   | 18    |   |             |      |
| Headton .....            |   | 4.37   | 18-19 |   |             |      |
| Lehigh .....             |   | 2.65   | 17-18 |   |             |      |
| Do .....                 |   | 2.55   | 19    |   |             |      |
| <i>Louisiana.</i>        |   |  |       |   |             |      |
| Lake Charles .....       |   | 2.80   | 20    |   |             |      |
| <i>Mississippi.</i>      |   |  |       |   |             |      |
| Americus .....           |   | 5.03   | 25    |   |             |      |
| Biloxi .....             |   | 2.75   | 25    |   |             |      |
| Columbus .....           |   | 3.75   | 22    |   |             |      |
| Louisville .....         |   | 2.80   | 21    |   |             |      |
| <i>Missouri.</i>         |   |  |       |   |             |      |
| Slakeston .....          |   | 2.66   | 18    |   |             |      |
| <i>New Jersey.</i>       |   |  |       |   |             |      |
| College Farm .....       |   | 2.73   | 3-4   |   |             |      |
| New Brunswick .....      |   | 2.95   | 3-4   |   |             |      |
| <i>New Mexico.</i>       |   |  |       |   |             |      |
| Folsom .....             |   | 2.90   | 20-21 |   |             |      |
| Roswell .....            |   | 2.54   | 18-19 |   |             |      |
| <i>Oklahoma.</i>         |   |  |       |   |             |      |
| Arapaho .....            |   | 2.72   | 19    |   |             |      |
| Fort Reno .....          |   | 2.50   | 18    |   |             |      |
| Fort Sill .....          |   | 7.70   | 18-20 |   |             |      |
| Guthrie .....            |   | 3.46   | 19    |   |             |      |
| Hennessey .....          |   | 2.50   | 20    |   |             |      |
| Kingfisher .....         |   | 4.51   | 19-20 |   |             |      |
| Mangum .....             |   | 4.50   | 18    |   |             |      |
| Norman .....             |   | 5.85   | 18-19 |   |             |      |
| Oklahoma .....           |   | 2.80   | 18-19 |   |             |      |
| Do .....                 |   | 4.32   | 19-20 |   |             |      |
| Prudence .....           |   | 3.51   | 20    |   |             |      |
| <i>Oregon.</i>           |   |  |       |   |             |      |
| Alpha .....              | 22.92                                   | 3.28   | 25    |   |             |      |
| Astoria .....            | 17.77                                   | 3.04   | 29-30 |   |             |      |
| Bandon .....             | 15.81                                   |  |       |   |             |      |
| Bay City .....           | 22.02                                   | 2.55   | 30    |   |             |      |
| Bullrun .....            | 12.35                                   |  |       |   |             |      |
| Cascade Locks .....      | 16.66                                   | 2.59   | 29    |   |             |      |
| Coquille .....           | 14.86                                   | 2.97   | 28    |   |             |      |
| Corvallis .....          | 10.93                                   |  |       |   |             |      |
| Fairview .....           | 12.45                                   |  |       |   |             |      |
| Falls City .....         | 20.96                                   | 3.12   | 27    |   |             |      |
| Forest Grove .....       | 14.22                                   |  |       |   |             |      |
| Gardiner .....           | 20.25                                   | 3.77   | 28    |   |             |      |
| Glenora .....            | 35.81                                   | 4.48   | 18    |   |             |      |
| Do .....                 |   | 6.94   | 26-27 |   |             |      |
| Do .....                 |   | 5.00   | 30    |   |             |      |
| Government Camp .....    | 11.60                                   | 3.54   | 26-27 |   |             |      |
| Kerby .....              | 17.74                                   | 5.21   | 26-27 |   |             |      |

TABLE X.—Excessive precipitation—Continued.

| Stations.           | Monthly rainfall<br>10 inches, or more. | Rainfall 2.50<br>inches, or<br>more, in 24<br>hours. |         | Rainfall of 1 inch,<br>or more, in one<br>hour. |       |      |
|---------------------|---|--|---------|---|-------|------|
|                     |   | Amt.   | Day.    | Amt.  | Time. | Day. |
| Oregon—Continued.   |   |  |         |   |       |      |
| Langlois            | 23.42                                   | Inches.  | Inches. |   |       |      |
| McMinnville         | 12.00                                   | 6.75   | 26-27   |   |       |      |
| Monmouth            | 12.45                                   |  |         |   |       |      |
| Monroe              | 11.04                                   |  |         |   |       |      |
| Mount Angel         | 10.35                                   |  |         |   |       |      |
| Nehalem             | 21.32                                   | 2.55   | 30      |   |       |      |
| Newberg             | 10.05                                   |  |         |   |       |      |
| Newport             | 17.49                                   |  |         |   |       |      |
| Placer              | 12.25                                   | 2.72   | 27      |   |       |      |
| Tillamook           | 12.84                                   |  |         |   |       |      |
| Toledo              | 10.35                                   |  |         |   |       |      |
| Vernonia            | 10.96                                   |  |         |   |       |      |
| South Carolina.     |   |  |         |   |       |      |
| Beaufort            |   | 3.15   | 25      |   |       |      |
| Charleston          |   | 3.54   | 25-26   | 1.15  | 1 00  | 25   |
| Georgetown          |   | 4.75   | 25-26   |   |       |      |
| Texas.              |   |  |         |   |       |      |
| Corpus Christi      |   |  |         | 1.06  | 0 30  | 23   |
| Estelle             |   | 3.10   | 19      |   |       |      |
| Forestburg          |   | 4.56   | 18-19   |   |       |      |
| Fruitland           |   | 4.78   | 18-19   |   |       |      |
| Galveston           |   |  |         | 1.81  | 0 25  | 19   |
| Grapevine           |   | 3.15   | 19      |   |       |      |
| Kerrville           |   | 2.50   | 19-20   |   |       |      |
| Mann                |   | 4.23   | 19      |   |       |      |
| Panther             |   | 2.63   | 19      |   |       |      |
| Rhineland           |   | 3.30   | 18      |   |       |      |
| Waxahachie          |   | 2.80   | 19      |   |       |      |
| Washington.         |   |  |         |   |       |      |
| Aberdeen            | 23.77                                   |  |         |   |       |      |
| Ashford             | 13.20                                   |  |         |   |       |      |
| Bremerton           | 14.44                                   |  |         |   |       |      |
| Brinnon             | 24.09                                   | 3.45   | 30      |   |       |      |
| Cedarlake           | 14.11                                   |  |         |   |       |      |
| Chehalis            | 11.25                                   |  |         |   |       |      |
| Clearwater          | 28.73                                   | 3.73   | 18      |   |       |      |
| Do.                 |   | 2.80   | 30      |   |       |      |
| Fort Canby          | 16.63                                   |  |         |   |       |      |
| Grandmound          | 13.05                                   |  |         |   |       |      |
| Lacenter            | 11.87                                   |  |         |   |       |      |
| Mayfield            | 12.16                                   |  |         |   |       |      |
| Monte Cristo        | 25.26                                   | 2.51   | 14      |   |       |      |
| Do.                 |   | 3.63   | 18      |   |       |      |
| Do.                 |   | 3.29   | 30      |   |       |      |
| Neah                | 29.87                                   | 5.12   | 17-19   |   |       |      |
| Do.                 |   | 3.81   | 29-30   |   |       |      |
| Olympia             | 14.63                                   | 2.92   | 30      |   |       |      |
| Port Crescent       | 13.14                                   |  |         |   |       |      |
| Sedro               | 10.08                                   |  |         |   |       |      |
| Snoqualmie          | 11.11                                   |  |         |   |       |      |
| Southbend           | 30.33                                   | 3.98   | 30      |   |       |      |
| Tacoma              | 10.11                                   |  |         |   |       |      |
| Twin                | 19.32                                   | 2.53   | 17-18   |   |       |      |
| Do.                 |   | 3.31   | 29-30   |   |       |      |
| Union City          | 25.07                                   | 5.32   | 30      |   |       |      |
| Vashon              | 10.25                                   |  |         |   |       |      |
| Wisconsin.          |   |  |         |   |       |      |
| Sharon              |   | 2.50   | 13      |   |       |      |
| Cuba.               |   |  |         |   |       |      |
| Havana              |   | 2.76   | 8-9     | 1.04  | 1 00  | 8    |
| Manzanillo          |   | 4.98   | 28-29   |   |       |      |
| Puerto Principe     |   |  |         | 1.08  | 0 48  | 2    |
| Do.                 |   |  |         | 1.24  | 0 46  | 29   |
| Santiago de Cuba    | 11.80                                   | 5.47   | 8-9     | 2.12  | 0 47  | 9    |
| Puerto Rico.        |   |  |         |   |       |      |
| Adjuntas            |   | 2.80   | 5       |   |       |      |
| Aguadilla           |   | 2.70   | 6       |   |       |      |
| Bayamon             | 16.31                                   | 3.41   | 4       |   |       |      |
| Do.                 |   | 2.65   | 19      |   |       |      |
| Canovanas           | 22.22                                   | 3.20   | 16      |   |       |      |
| Do.                 |   | 5.06   | 20      |   |       |      |
| Corozal             | 10.10                                   |  |         |   |       |      |
| Fajardo             | 17.80                                   | 8.00   | 19-20   |   |       |      |
| Hacienda Coloso     | 10.42                                   | 5.71   | 15      |   |       |      |
| Hacienda Monserrate |   | 2.80   | 15      |   |       |      |
| Isabela             | 12.81                                   | 2.57   | 6       |   |       |      |
| Do.                 |   | 2.90   | 19      |   |       |      |
| Luquillo            | 29.52                                   | 14.28  | 18-20   |   |       |      |
| Do.                 |   | 5.52   | 22      |   |       |      |
| Puerta de Tierra    | 12.21                                   |  |         |   |       |      |
| San Juan            | 11.81                                   | 2.57   | 18-19   | 1.13  | 0 45  | 18   |
| Vieques             | 16.99                                   | 5.05   | 19-20   |   |       |      |
| Do.                 |   | 8.76   | 22-23   |   |       |      |
| West Indies.        |   |  |         |   |       |      |
| Kingston, Jamaica   | 10.80                                   | 4.20   | 29-30   | 1.19  | 0 42  | 1    |
| Do.                 |   |  |         | 1.04  | 0 47  | 29   |



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Chart I. Tracks of Centers of High Areas. November, 1899.

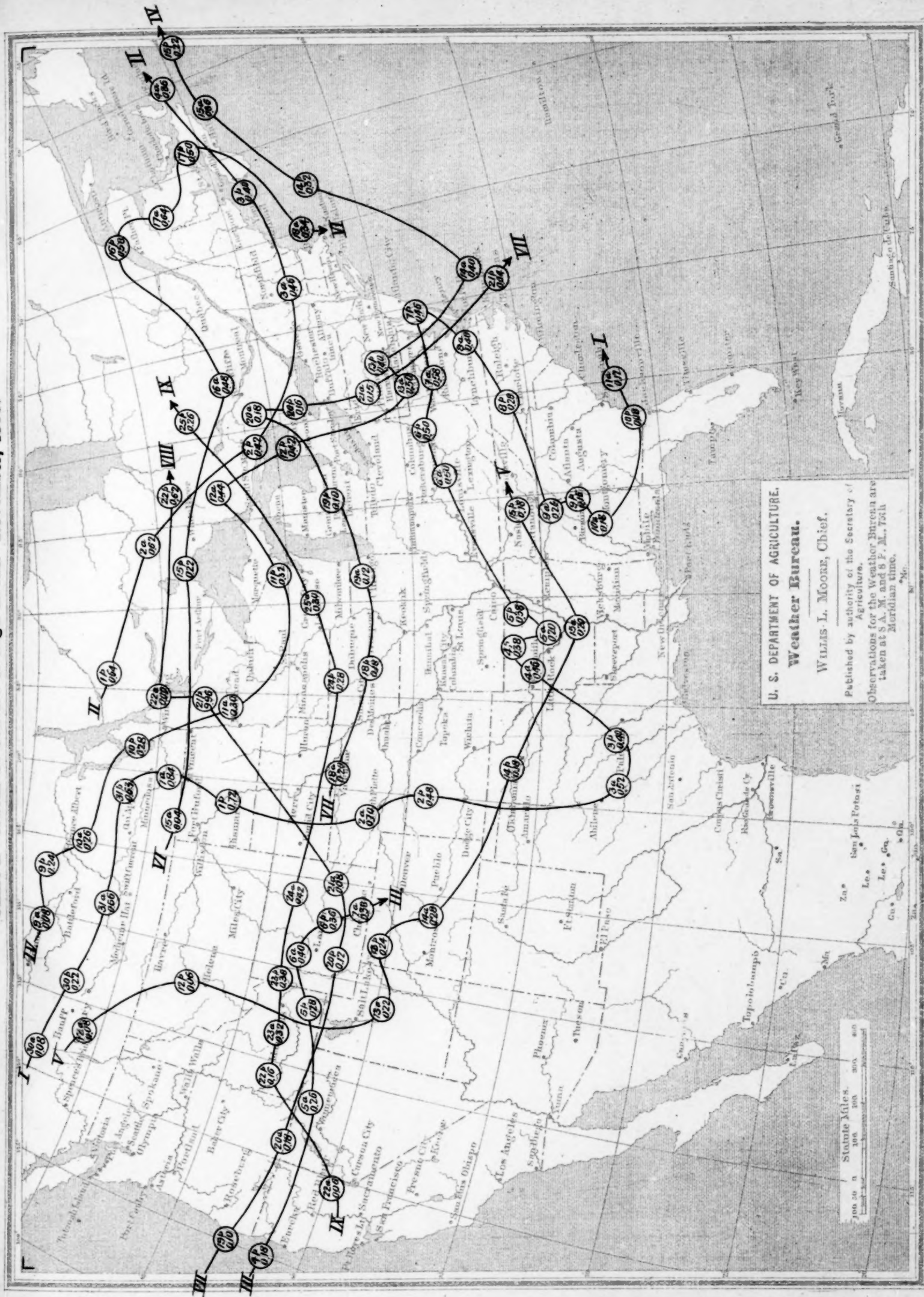


Chart II. Tracks of Centers of Low Areas. November, 1899.

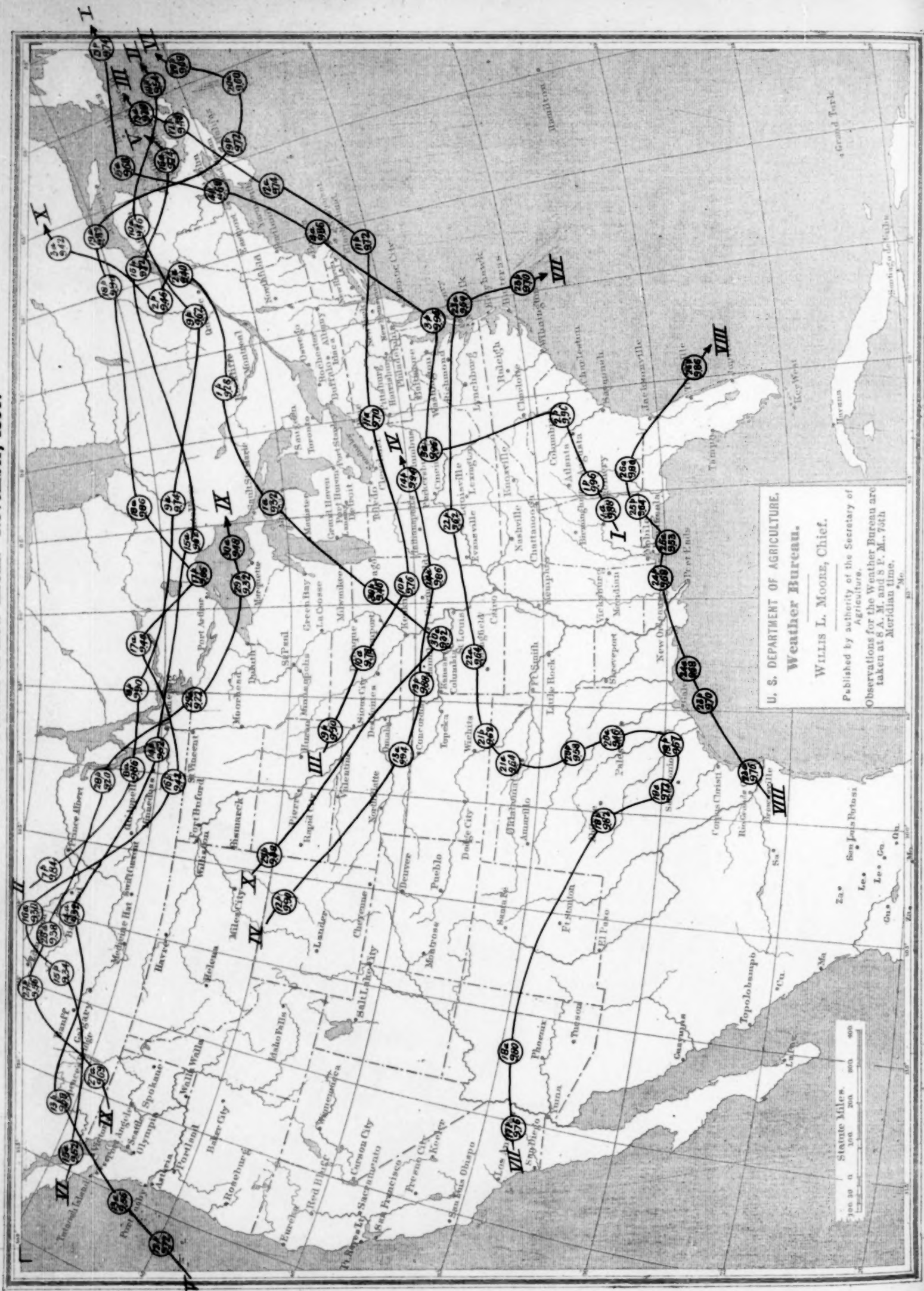




Chart III. Total Precipitation. November, 1899.

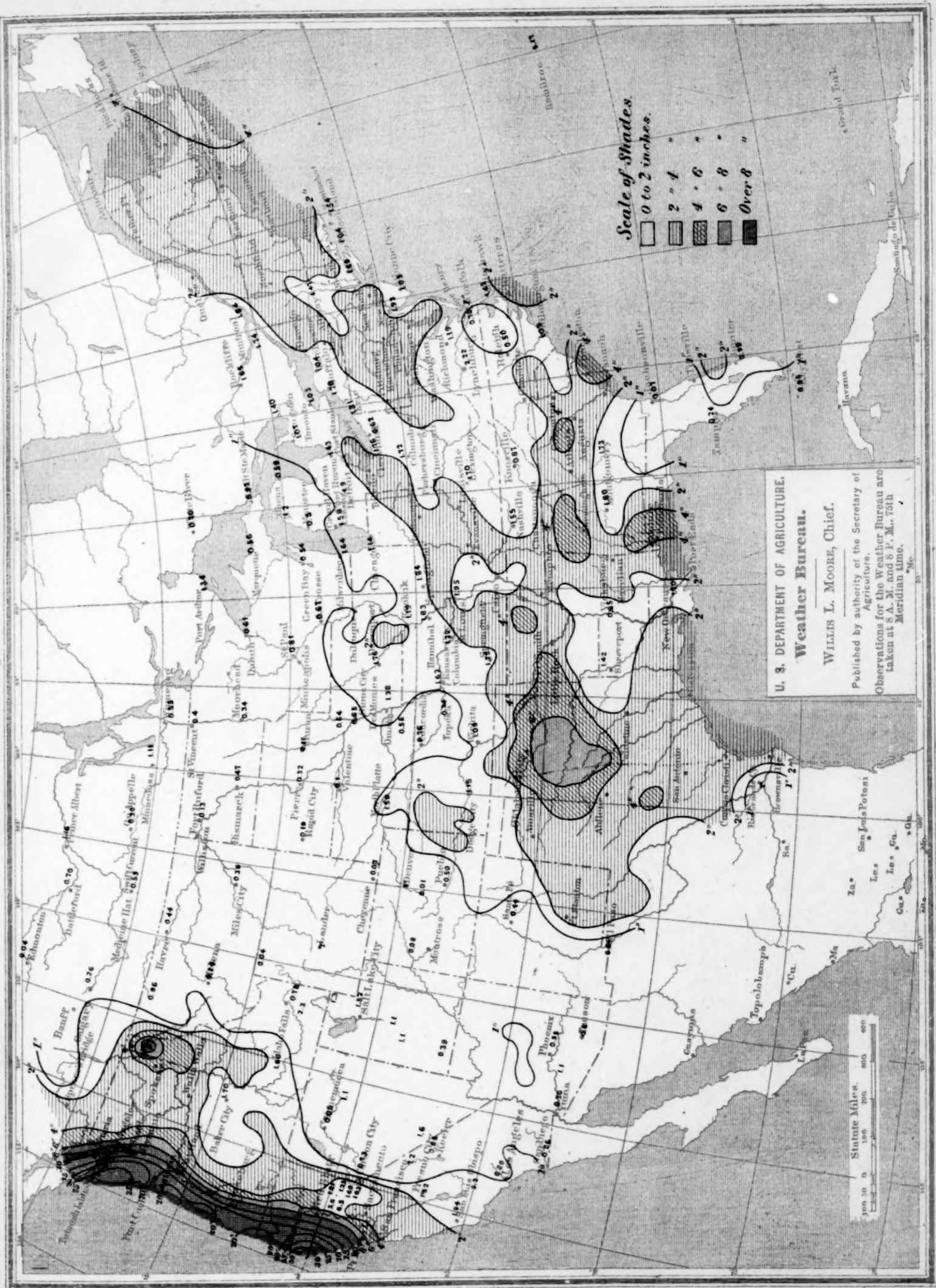


Chart IV. Sea-Level Pressure and Temperature; Resultant Surface Winds. November, 1899.

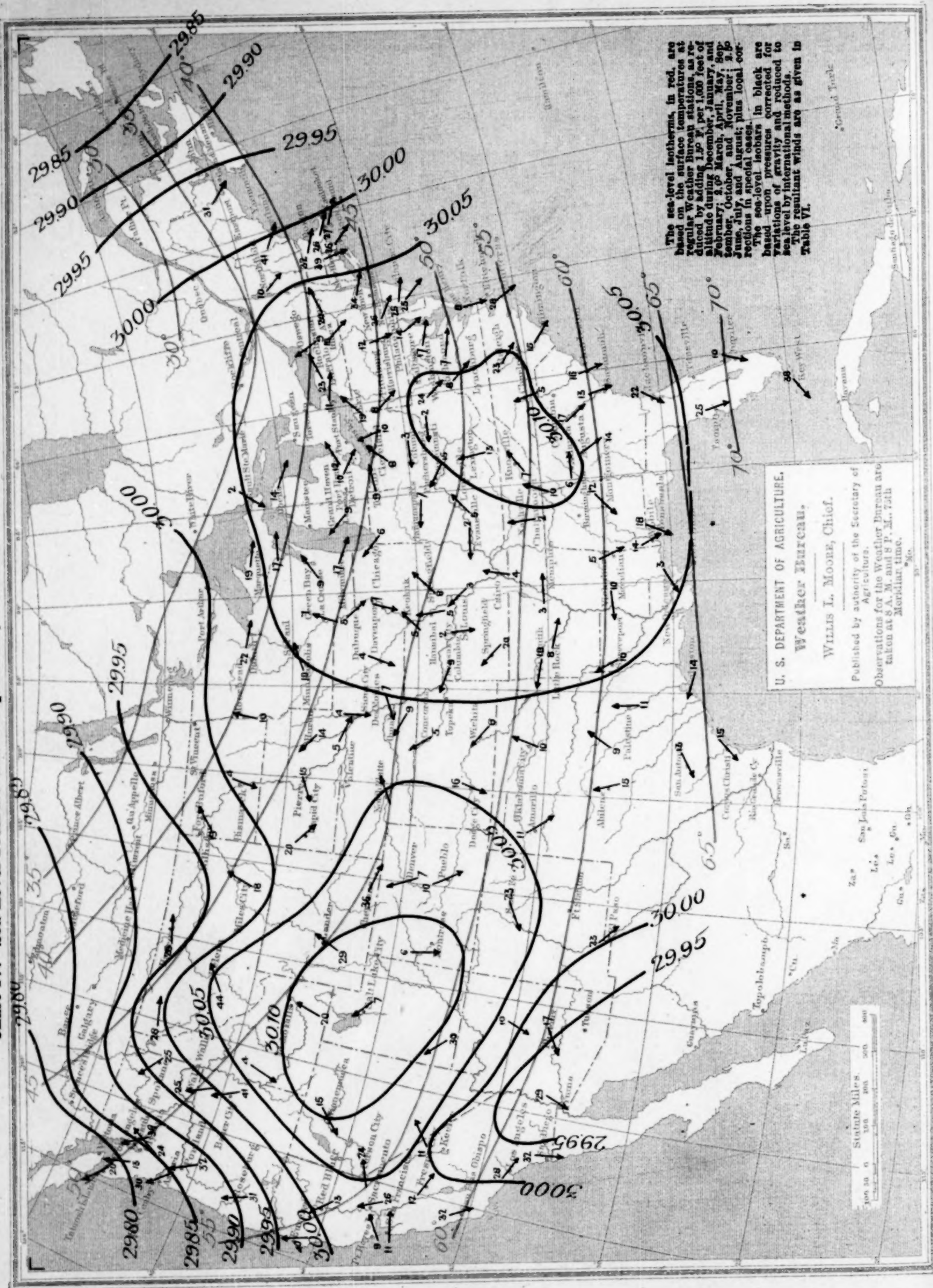




Chart V. Hydrographs for Seven Principal Rivers of the United States. November, 1899.

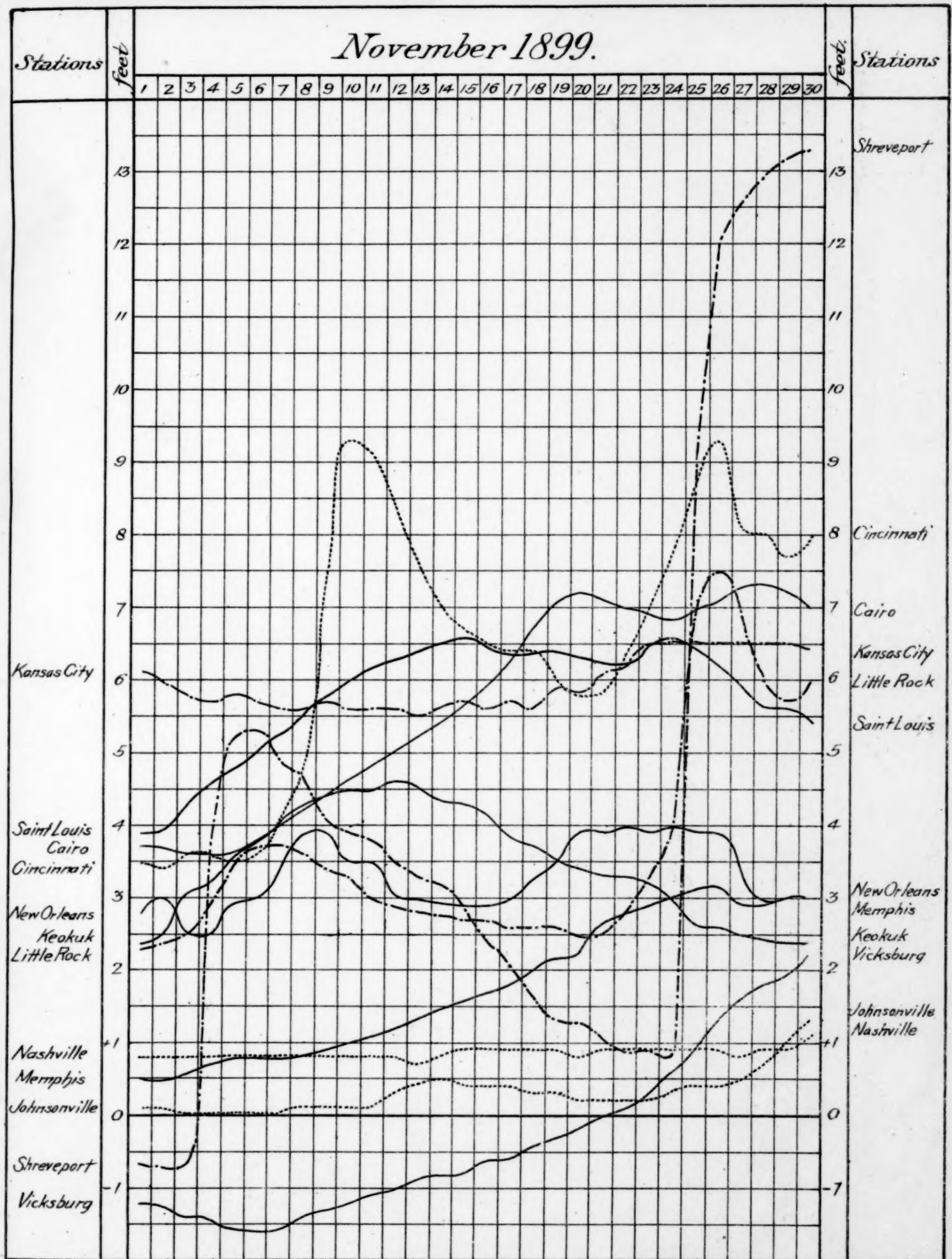


Chart VI. Surface Temperatures; Maximum, Minimum, and Mean. November, 1899.

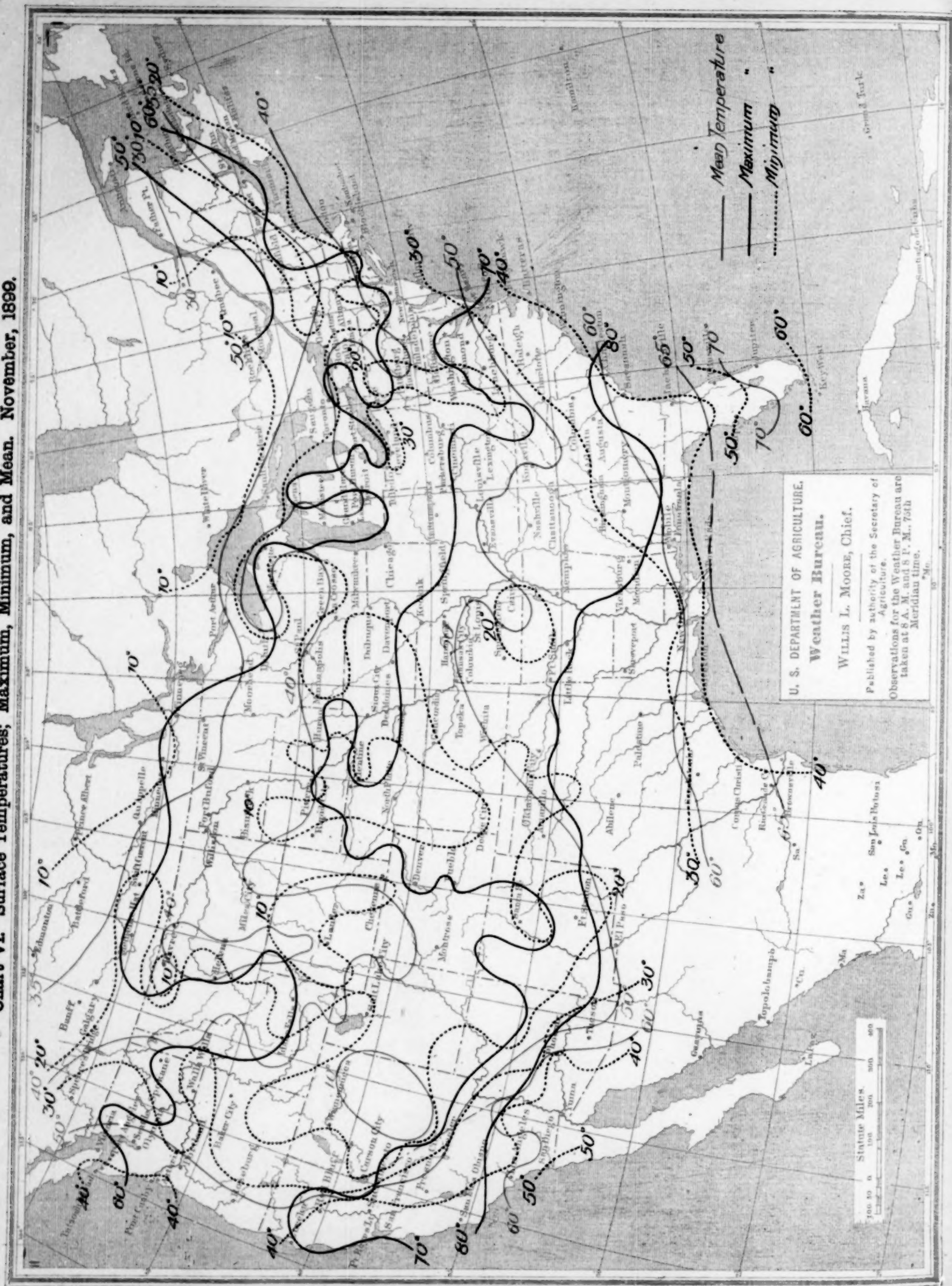




Chart VII. Percentage of Sunshine. November, 1899.

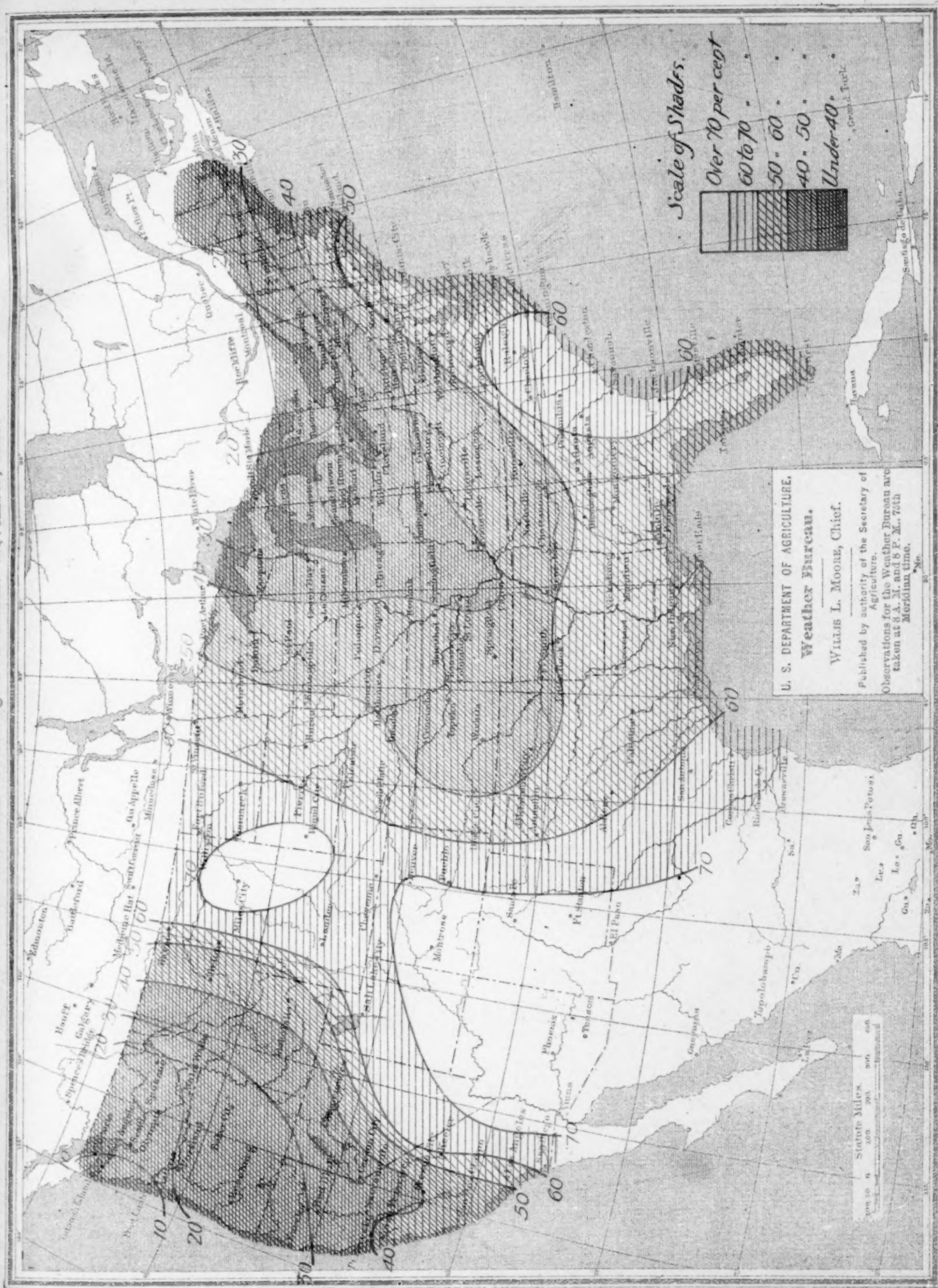


Chart VIII. Total Snowfall for November, 1899.

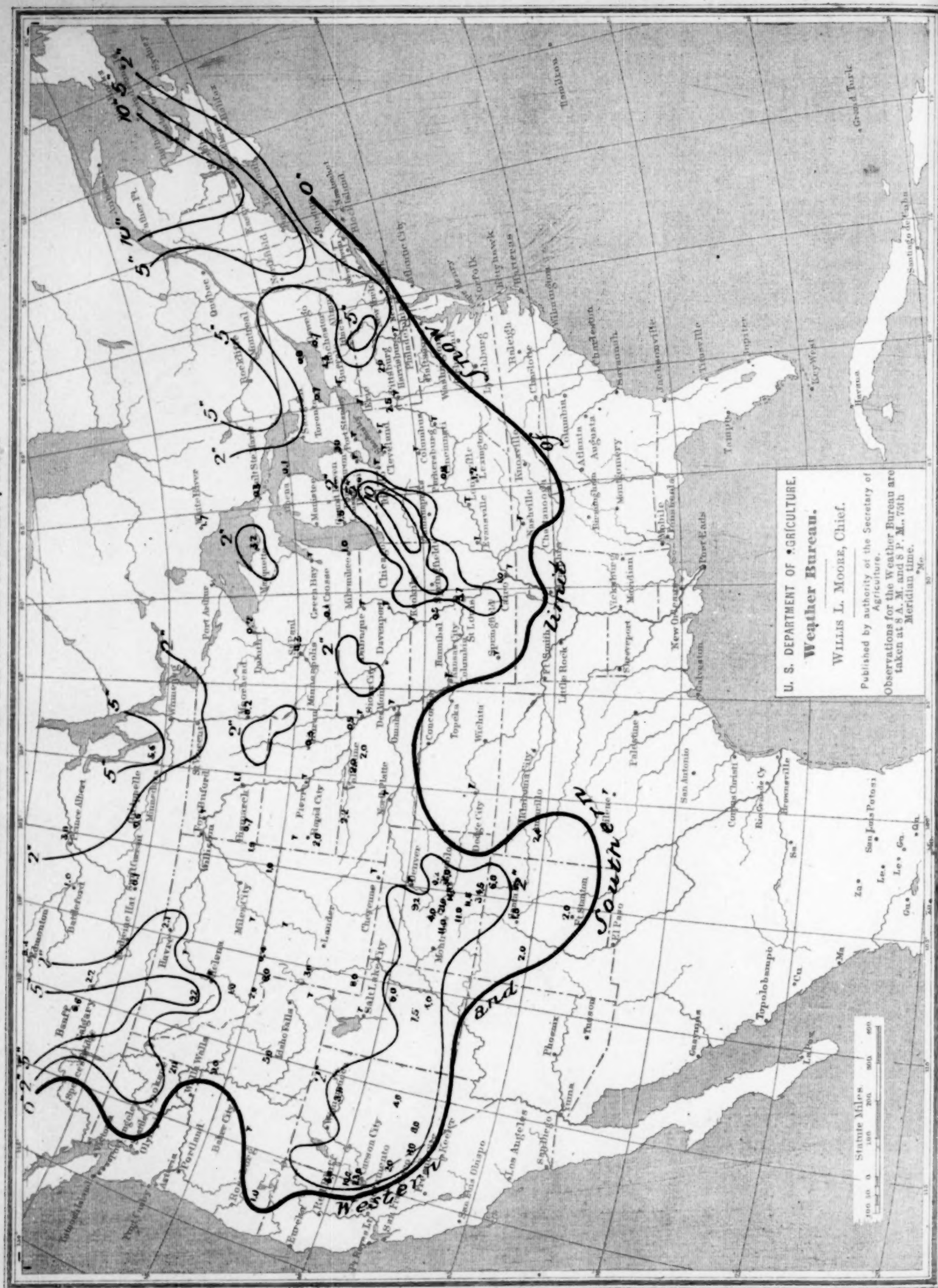




Chart IX. West Indian Monthly Isobars, Isotherms, and Resultant Winds. November, 1899.

